reassessment of risk. This may also mean that equity cost rates have changed as well. Nonetheless, these conditions by themselves do not mean that the DCF model does not provide an accurate indicator of equity cost rates.

(2) <u>The assumptions used in the derivation of the DCF model</u>

First, it must be noted that all economic models are derived using fairly restrictive assumptions. In the DCF model, assumptions such as constant P/E and dividend payout ratios make the model internally consistent. Criticisms of the assumptions of the model are valid if it can be demonstrated that the model is not robust with respect to obvious real world conditions that deviate from these assumptions. No such evidence has been provided in this proceeding. The fact that the DCF model is used almost universally in the investment community and in utility ratemaking is indicative of the robustness of the methodology. The model does not require that investors have an infinite investment horizon. Simply put, the DCF model only presumes that stocks are priced on the basis of current and prospective dividends. Especially in the case of public utility stocks, I believe that this is a reasonable assumption.

(3) <u>The assumption of a constant P/E ratio, given that P/E ratios are not constant but change over time</u>

P/E ratios change constantly as new information comes to the market that causes investors to revalue a company's shares (the numerator of the P/E ratio) relative to current earnings (the denominator of the P/E ratio). This new information may be associated with changes in the economic landscape that result in changes in equity cost rates (such as changes in interest rates or investors' risk/return tradeoff). In the context of the DCF model, the fact that P/E ratios change only provides an indication of changes in a firm's share price relative to past earnings. Share prices look forward and are determined by a firm's prospective cash returns discounted to the present by investors' required return. Earnings look backwards and are a function of firm performance and generally accepted accounting conventions.

Thus, in the context of the DCF model, the fact that P/E ratios change is simply an indication that new information relating to the economic environment is available and this has caused investors to revalue shares. The DCF is based on expectations, and thus it is also likely that the new information actually results in a change in equity cost rates.

(4) <u>The DCF model produces insufficient earnings when market-to-book ratios are above 1.0.</u>

The market value of a firm's equity exceeds the book value of equity when the firm is expected to earn more on the book value of investment than investors require. In other words, the expected return on equity capital is greater than the cost of equity capital (the return that investors require). Given the almost universal application of the DCF model in regulatory and investment circles, it is rather obvious that public utilities would not be selling in excess of 1.00 times book value if the DCF model produced insufficient earnings. As such, Mr. Moul's hypothesis is incorrect.

Q. PLEASE REVIEW MR. MOUL'S RISK PREMIUM ANALYSIS.

A. On pages 29-33 of his testimony, Schedules 9 and 10, and Appendices F and G, Mr. Moul arrives at a risk premium derived equity cost rate of 11.71% for the proxy group of electric utility companies. These figures include a base yield of 6.50% and an equity risk premium of 5.00%. This result is summarized below.

Risk Premium Equity Cost Rate
Electric Utility Company Proxy Group

Base Yield	6.50%
Risk Premium	5.00%
RP Cost Rate	11.50%
Flotation Costs	0.21%
RP Equity Cost Rate	11.70%

Q. PLEASE DISCUSS THE BASE YIELD OF MR. MOUL'S RISK PREMIUM ANALYSIS.

A. The base yield in Mr. Moul's RP analysis is the prospective yield on long-term, 'A' rated public utility bonds. Using the yield on these securities inflates the required return on equity for the Company in three ways: (1) the base yield of 6.50% is above the current yield on A-rated public utility bonds, which is in the 6.0% range. It is my opinion that long-term interest rate forecasts are not reliable, credible, or accurate, and I am not aware of any studies that indicate forecasted interest rates are better measures of future interest rates than today's interest rates; (2) long-term bonds are subject to interest rate risk, a risk which does not affect common stockholders since dividend payments (unlike bond interest payments) are not fixed but tend to increase over time; and (3) the base yield in Mr. Moul's risk premium study is subject to credit risk since it is not default risk-free like an obligation of the U.S. Treasury. As a result, its yield-to-maturity includes a premium for default risk and therefore is above its expected return. Hence, using a bond's yield-to-maturity as a base yield results in an overstatement of investors' return expectations.

Q. PLEASE REVIEW MR. MOUL'S RISK PREMIUM STUDY.

A. Mr. Moul performs a historical risk premium study that appears in Schedules 9 and 10 and Appendix F. This study involves an assessment of the historical differences between S&P Public Utility Index stock returns and public utility bond returns over various time periods between the years 1928-2005. This type of historical evaluation of stock returns is often called the "Ibbotson approach" after Professor Roger Ibbotson who popularized this method of assessing historical financial market returns. Mr. Moul evaluates the stock-bond return differentials using different measures of central tendency (the geometric and arithmetic means and the median) over four alternative time intervals (1928-2005, 1952-2005, 1974-2005, and 1979-2005). From the results of his study, he concludes that an appropriate risk premium for the S&P Public Utilities is 5.20%. To recognize the lower risk of electric utility companies, he arbitrarily adjusts this figure downwards to 5.00%.

Q. PLEASE ADDRESS THE ISSUE INVOLVING THE USE OF HISTORICAL STOCK AND BOND RETURNS TO COMPUTE A FORWARD-LOOKING OR EX ANTE RISK PREMIUM.

A. Using the historical relationship between stock and bond returns to measure an ex ante equity risk premium is erroneous and, especially in this case, overstates the true market equity risk premium. The equity risk premium is based on expectations of the future and when past market conditions vary significantly from the present, historic data does not provide a realistic or accurate barometer of expectations of the future. At the present time, using historical returns to measure the ex ante equity risk premium ignores current market conditions and masks the dramatic change in the risk and return relationship between stocks and bonds. This change suggests that the equity risk premium has declined.

Q. PLEASE DISCUSS THE ERRORS IN USING HISTORICAL STOCK AND BOND RETURNS TO ESTIMATE AN EQUITY RISK PREMIUM.

A. There are a number of flaws in using historical returns over long time periods to estimate expected equity risk premiums. These issues include:

(A) Biased historical bond returns;

(B) The arithmetic versus the geometric mean return;

(C) Unattainable and biased historical stock returns;

(D) Survivorship bias;

(E) The "Peso Problem;"

(F) Market conditions today are significantly different than the past; and

(G) Changes in risk and return in the markets.

These issues will be addressed in order.

<u>Biased Historical Bond Returns</u>

Q. HOW ARE HISTORICAL BOND RETURNS BIASED?

A. An essential assumption of these studies is that over long periods of time investors' expectations are realized. However, the experienced returns of bondholders in the past violate this critical assumption. Historic bond returns are biased downward as a measure of expectancy because of capital losses suffered by bondholders in the past. As such, risk premiums derived from this data are biased upwards.

<u>The Arithmetic versus the Geometric Mean Return</u>

Q. PLEASE DISCUSS THE ISSUE RELATING TO THE USE OF THE ARITHMETIC VERSUS THE GEOMETRIC MEAN RETURNS IN THE IBBOTSON METHODOLOGY.

A. The measure of investment return has a significant effect on the interpretation of the risk premium results. When analyzing a single security price series over time (i.e., a time series), the best measure of investment performance is the geometric mean return. Using the arithmetic mean overstates the return experienced by investors. In a study entitled "Risk and Return on Equity: The Use and Misuse of Historical Estimates," Carleton and Lakonishok make the following observation: "The geometric mean measures the changes in wealth over more than one period on a buy and hold (with dividends invested) strategy."[27] Since Mr. Moul's study covers more than one period (and he assumes that dividends are reinvested), he should be employing the geometric mean and not the arithmetic mean.

Q. PLEASE PROVIDE AN EXAMPLE DEMONSTRATING THE PROBLEM WITH USING THE ARITHMETIC MEAN RETURN.

A. To demonstrate the upward bias of the arithmetic mean, consider the following example. Assume that you have a stock (that pays no dividend) that is selling for $100 today, increases to $200 in one year, and then falls back to $100 in two years. The table below shows the prices and returns.

Time Period	Stock Price	Annual Return
0	$100	
1	$200	100%
2	$100	-50%

The arithmetic mean return is simply (100% + (-50%))/2 = 25% per year. The geometric mean return is $((2 * .50)^{(1/2)}) - 1 = 0\%$ per year. Therefore, the arithmetic mean return suggests that your stock has appreciated at an annual rate of 25%, while

[27] Willard T. Carleton and Josef Lakonishok, "Risk and Return on Equity: The Use and Misuse of Historical Estimates," *Financial Analysts Journal* (January-February, 1985), pp. 38-47.

the geometric mean return indicates an annual return of 0%. Since after two years, your stock is still only worth $100, the geometric mean return is the appropriate return measure. For this reason, when stock returns and earnings growth rates are reported in the financial press, they are generally reported using the geometric mean. This is because of the upward bias of the arithmetic mean. As further evidence as to the appropriate mean return measure, the U.S. Securities and Exchange Commission requires equity mutual funds to report historical return performance using geometric mean and not arithmetic mean returns.[28]

In sum, Mr. Moul's arithmetic mean return measures are biased and should be disregarded.

<u>Unattainable and Biased Historic Stock Returns</u>

Q. YOU NOTE THAT HISTORIC STOCK RETURNS ARE BIASED USING THE IBBOTSON METHODOLOGY. PLEASE ELABORATE.

A. Returns developed using Ibbotson's methodology are computed on stock indexes and therefore (1) cannot be reflective of expectations because these returns are unattainable to investors, and (2) produce biased results. This methodology assumes (a) monthly portfolio rebalancing and (b) reinvestment of interest and dividends. Monthly portfolio rebalancing presumes that investors rebalance their portfolios at the end of each month in order to have an equal dollar amount invested in each security at the beginning of each month. The assumption would obviously generate extremely high transaction costs

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[28] U.S. Securities and Exchange Commission, Form N-1A.

and thereby render these returns unattainable to investors. In addition, an academic study demonstrates that the monthly portfolio rebalancing assumption produces biased estimates of stock returns.[29]

Transaction costs themselves provide another bias in historic versus expected returns. The observed stock returns of the past were not the realized returns of investors due to the much higher transaction costs of previous decades. These higher transaction costs are reflected through the higher commissions on stock trades, and the lack of low cost mutual funds like index funds.

Survivorship Bias

Q. HOW DOES SURVIVORSHIP BIAS AFFECT MR. MOUL'S HISTORIC EQUITY RISK PREMIUM?

A. Using historic data to estimate an equity risk premium suffers from survivorship bias. Survivorship bias results when using returns from indexes like the S&P 500. The S&P 500 includes only companies that have survived. The fact that returns of firms that did not perform so well were dropped from these indexes is not reflected. Therefore these stock returns are upwardly biased because they only reflect the returns from more successful companies.

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[29] See Richard Roll, "On Computing Mean Returns and the Small Firm Premium," *Journal of Financial Economics* (1983), pp. 371-86.

<u>The "Peso Problem"</u>

Q. WHAT IS THE "PESO PROBLEM" AND HOW DOES IT AFFECT HISTORIC RETURNS AND EQUITY RISK PREMIUMS?

A. Mr. Moul's use of historic return data also suffers from the so-called "peso problem." The "peso problem" issue was first highlighted by the Nobel laureate, Milton Friedman, and gets its name from conditions related to the Mexican peso market in the early 1970s. This issue involves the fact that past stock market returns were higher than were expected at the time because despite war, depression, and other social, political, and economic events, the US economy survived and did not suffer hyperinflation, invasion, and the calamities of other countries. As such, highly improbable events, which may or may not occur in the future, are factored into stock prices, leading to seemingly low valuations. Higher than expected stock returns are then earned when these events do not subsequently occur. Therefore, the "peso problem" indicates that historical stock returns are overstated as measures of expected returns.

<u>Market Conditions Today are Significantly Different than in the Past</u>

Q. FROM AN EQUITY RISK PREMIUM PERSPECTIVE, PLEASE DISCUSS HOW MARKET CONDITIONS ARE DIFFERENT TODAY.

A. The equity risk premium is based on expectations of the future. When past market conditions vary significantly from the present, historic data does not provide a realistic or accurate barometer of expectations of the future. As noted previously, stock valuations (as measured by P/E) are relatively high and interest rates are relatively low, on a historic basis. Therefore, given the high stock prices and low interest rates, expected returns are likely to be lower on a going forward basis.

<u>Changes in Risk and Return in the Markets</u>

Q. PLEASE DISCUSS THE NOTION THAT HISTORIC EQUITY RISK PREMIUM STUDIES DO NOT REFLECT THE CHANGE IN RISK AND RETURN IN TODAY'S FINANCIAL MARKETS.

A. The historic equity risk premium methodology is unrealistic in that it makes the explicit assumption that risk premiums do not change over time based on market conditions such as inflation, interest rates, and expected economic growth. Furthermore, using historic returns to measure the equity risk premium masks the dramatic change in the risk and return relationship between stocks and bonds. The nature of the change, as I will discuss below, is that bonds have increased in risk relative to stocks. This change suggests that the equity risk premium has declined in recent years.

Page 1 of Exhibit_(JRW-9) provides the yields on long-term U.S. Treasury bonds from 1926 to 2005. One very obvious observation from this graph is that interest rates increase dramatically from the mid-1960s until the early 1980s, and since have returned to their 1960 levels. The annual market risk premiums for the 1926 to 2005 period are provided on page 2 of Exhibit_(JRW-9). The annual market risk premium is defined as the return on common stock minus the return on long-term

Treasury Bonds. There is considerable variability in this series and a clear decline in recent decades. The high was 54% in 1933 and the low was -38% in 1931. Evidence of a change in the relative riskiness of bonds and stocks is provided on page 3 of Exhibit_(JRW-9) which plots the standard deviation of monthly stock and bond returns since 1930. The plot shows that, whereas stock returns were much more volatile than bond returns from the 1930s to the 1970s, bond returns became more variable than stock returns during the 1980s. In recent years stocks and bonds have become much more similar in terms of volatility, but stocks are still a little more volatile. The decrease in the volatility of stocks relative to bonds over time has been attributed to several stock related factors: the impact of technology on productivity and the new economy; the role of information (see former Federal Reserve Chairman Greenspan's comments referred to earlier in this testimony) on the economy and markets; better cost and risk management by businesses; and several bond related factors; deregulation of the financial system; inflation fears and interest rates; and the increase in the use of debt financing. Further evidence of the greater relative riskiness of bonds is shown on page 4 of Exhibit_(JRW-9), which plots real interest rates (the nominal interest rate minus inflation) from 1926 to 2005. Real rates have been well above historic norms during the past 10-15 years. These high real interest rates reflect the fact that investors view bonds as riskier investments.

The net effect of the change in risk and return has been a significant decrease in the return premium that stock investors require over bond yields. In short, the equity or market risk premium has declined in recent years. This decline has been discovered in studies by leading academic scholars and investment firms, and has been acknowledged by government regulators. As such, using a historic equity risk premium analysis is simply outdated and not reflective of current investor expectations and investment fundamentals.

Q. DO YOU HAVE ANY OTHER THOUGHTS ON THE USE OF HISTORICAL RETURN DATA TO ESTIMATE AN EQUITY RISK PREMIUM?

A. Yes. Jay Ritter, a Professor of Finance at the University of Florida, identified the use of historical stock and bond return data to estimate a forward-looking equity risk premium as one of the "Biggest Mistakes" taught by the finance profession.[30] His argument is based on the theory behind the equity risk premium, the excessive results produced by historical returns, and the previously-discussed errors of such as survivorship bias in historical data.

Q. PLEASE DISCUSS MR. MOUL'S USE OF THE CAPM.

A. On pages 33 to 37, in Schedule 11, and in Appendix H, Mr. Moul applies the CAPM to his proxy group of electric utility companies. There are four flaws with Mr. Moul's CAPM analysis: (1) his risk-free rate of 5.50%, (2) the use of leverage-adjusted betas, (3) his market risk premium of 6.27%, and (4) his size and flotation cost adjustments.

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[30] Jay Ritter, "The Biggest Mistakes We Teach," *Journal of Financial Research* (Summer 2002).

This result is summarized below:

CAPM Equity Cost Rate
Gas Company Proxy Group

	CAPM
Risk-Free Rate	5.50%
Beta	0.94
Market Risk Premium	6.27%
CAPM Result	11.39 %
Size Adjustment	1.02%
Flotation Costs	0.20%
CAPM Equity Cost Rate	**12.62%**

Q. PLEASE DISCUSS MR. MOUL'S USE OF LEVERAGE-ADJUSTED BETAS IN HIS CAPM APPROACH.

A. Whereas the average beta for the electric utility company group is 0.82, Mr. Moul employs a beta of 0.94. He has adjusted the beta upwards for the book value/market value capitalization difference. As such, he has effectively made the same leverage adjustment to his betas that he made to his DCF results to reflect the difference between the market values and the book values of the companies in his electric utility company proxy group. The errors in this approach were discussed above.

Q. PLEASE REVIEW THE ERRORS IN MR. MOUL'S EQUITY OR MARKET RISK PREMIUM IN HIS CAPM APPROACH.

A. The primary problem with Mr. Moul's CAPM analysis is the size of the market or equity risk premium. Mr. Moul develops a market risk premium of 6.27% in Appendix H. .It is computed as the average risk premium of (1) the 1926-2005 historic risk premium results from the Ibbotson study of 6.5% and (2) a projected market risk premium of 6.04% using the average of (a) *Value Line's* 3-5 year annual return projections and (b) a DCF expected market return using the S&P 500. The primary problem with Mr. Moul's equity risk premium is that both the Ibbotson historic returns and Mr. Moul's projected market returns are overstated as measures of expected market risk premiums.

The Ibbotson historic risk premium simply represents the difference in the arithmetic mean stock and bond returns over the 1926-2005 period. The errors in using the relationship between long-term historic stock and bond returns to estimate an expected market or equity risk premium were discussed above. In short, the procedure overstates the true market or equity risk premium.

Q. PLEASE CRITIQUE MR. MOUL'S PROSPECTIVE EQUITY OR MARKET RISK PREMIUM OF 10.38% WHICH HE CALCULATES USING *VALUE LINE'S* PROJECTED RETURNS.

A. The primary error in using *Value Line's* 3-5 year annual return projections is that these projections are consistently high relative to actual experienced returns and, as such, provide upwardly biased equity or market risk premiums. This bias is highlighted in a study shown in Exhibit_(JRW-10). Over the 1984-2004 time period, this study demonstrates that *Value Line's* projected 3-5 year annual return has been, on average, 3.24 percent above the actual 3-5 year annual return. As such, *Value Line's* 3-5 year annual returns produce upwardly-biased equity or market risk premiums.

This positive bias in *Value Line*'s 3-5 year annual returns that I show above is corroborated in a study performed by *Value Line* itself. Page 2 of Exhibit_(JRW-10) shows *Value Line* 's own study that demonstrates that it's projected market returns have been in excess of the actual returns.

Q. PLEASE PROVIDE ADDITIONAL EMPIRICAL EVIDENCE ON BIASES IN USING VALUE LINE'S DIVIDEND YIELD AND MEDIAN APPRECIATION POTENTIAL TO ESTIMATE AN EXPECTED MARKTE RETURN.

A. To evaluate the use of *Value Line*'s data to estimate an expected market return, I used the *Value Line Investment Analyzer* (Dated January 20, 2007). I discovered three errors in Mr. Moul's analysis which lead to an overstatement of the expected market return and therefore equity risk premium using *Value Line's* dividend yield and 3-5 year median appreciation potential. These errors include:

1. The dividend yield figure used by Mr. Moul is only for stocks followed by *Value Line* which pay a dividend. As of January 20, 2007, *Value Line* reported no dividend yield for 703 of its 1,700 stocks (41% of the 1,700 stocks). Therefore, the expected return on these 703 stocks using the DCF model would simply be the annual price appreciation potential. By using the dividend yield for only those stocks that pay a dividend inflates Mr. Moul's expected market return and equity risk premium by about 50 basis points.

2. As shown above, *Value Line* has a tendency to produce inflated projections of growth, primarily since the service rarely forecasts negative growth, which is a common occurrence. As of January 20, 2007, *Value Line* projected negative price appreciation potential for only 220 of the 1,700 stocks, or 13% of the stocks it covers.
3. Using the median appreciation potential results in an inflated expected market return and equity risk premium since it effectively gives equal weight to all 1,700 stocks. That is, all companies are weighted equally in producing the median price appreciation potential. Therefore, *Value Line* gives the same weight to Exxon Mobil, with a market capitalization of $424B, as its does to Evergreen Solar, with a market capitalization of a $500M. Obviously, Exxon Mobil is a much, much bigger part of the stock market than Evergreen Solar, and therefore should be given a much greater weight in determining an expected market return.

Q. **PLEASE ASSESS MR. MOUL'S EQUITY RISK PREMIUM DERIVED FROM APPLYING THE DCF MODEL TO THE S&P 500.**

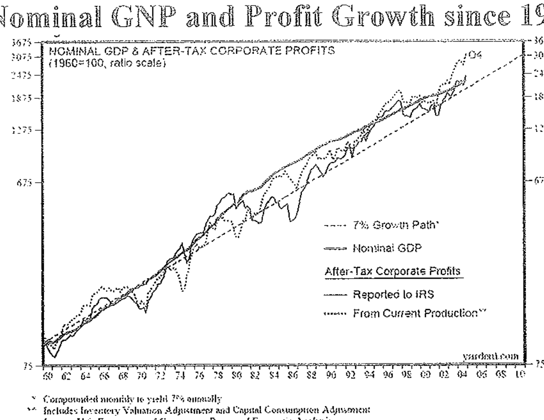
A. Mr. Moul also estimated an expected equity risk premium of 12.70% by applying the DCF model to the S&P 500. This approach uses a dividend yield of 1.86% and an expected DCF growth rate of 10.74%. The primary error in this approach is that the expected DCF growth rate is the projected 5-year EPS growth rate for the companies in the S&P 500 as reported by First Call.

Q. WHAT EVIDENCE CAN YOU PROVIDE THAT THE MR MOUL'S S&P 500 GROWTH RATE IS EXCESSIVE?

A. Mr. Moul's expected S&P 500 growth rate of 10.74% represents the forecasted 5-year EPS growth rates of Wall Street analysts. Earlier in my testimony I demonstrated the upward bias in analysts' EPS growth rate forecasts. This produces an overstated expected market return and equity risk premium in Mr. Moul's approach.

Furthermore, these growth rates are inconsistent with economic and earnings growth in the U.S. The long-term economic and earnings growth rate in the U.S. has only been about 7%. Edward Yardeni, a well-known Wall Street economist, calls this the "7% Solution" to growth in the U.S. The graph below comes from his analysis of GNP and profit growth since 1960.

The 7% Solution
Nominal GNP and Profit Growth since 1960



Source: Edward Yardeni, Strategists Handbook, Oak Associates, April 2005

As further evidence of the long-term growth rate in the U.S., I have performed a study of the growth in nominal GNP, S&P 500 stock price appreciation, and S&P

500 EPS and DPS growth since 1960. The results are provided on page 1 of Exhibit_(JRW-11) and a summary is given in the table below.

GNP, S&P 500 Stock Price, EPS, and DPS Growth
1960-Present

Nominal GNP	7.28%
S&P 500 Stock Price Appreciation	7.19%
S&P 500 EPS	7.38%
S&P 500 DPS	5.67%
Average	6.88%

These results offer compelling evidence that a long-run growth rate of about 7% is appropriate for companies in the U.S. Mr. Moul's long-run growth rate projection is clearly not realistic. These estimates suggest that companies in the U.S. would be expected to (1) significantly increase their growth rate of EPS in the future, and (2) maintain that growth indefinitely in an economy that is expected to grow at about one half his projected growth rates. Such a scenario lacks rational economic reasoning.

Q. PLEASE PROVIDE A SUMMARY ASSESSMENT OF MR. MOUL'S EQUITY RISK PREMIUMS DERIVED FROM EXPECTED MARKET RETURNS.

A. Mr. Moul's equity risk premium derived from expected market return models are inflated due to errors and bias in his studies. As previously discussed, at the present time stock prices (relative to earnings and dividends) are high while interest rates are low. Major stock market upswings which produce above average returns tend to occur when stock prices are low and interest rates are high. Thus, current market conditions do not suggest above average expected market return. Consistent with this observation, the financial forecasters in the Federal Reserve Bank of Philadelphia survey expect a market return of 7.00% over the next ten years. In addition, the *CFO Magazine* – Duke University Survey of over 500 CFOs shows an expected return on the S&P 500 of 8.40% over the next ten years.

Q. TO CONCLUDE THIS DISCUSSION, PLEASE SUMMARIZE MR. MOUL'S RISK PREMIUM AND CAPM RESULTS IN LIGHT OF THE EVIDENCE ON RISK PREMIUMS IN TODAY'S MARKETS.

A. Both Mr. Moul's risk premium and CAPM methods are effectively risk premium approaches to estimating equity cost rates. In both approaches, Mr. Moul employs equity risk premiums that are well in excess of the equity risk premium estimates (a) discovered in recent academic studies by leading finance scholars and (b) employed by leading investment banks, management consulting firms, financial forecasters and corporate CFOs.

Q. PLEASE DISCUSS MR. MOUL'S COMPARABLE EARNINGS ANALYSIS.

A. Between pages 37 and 40 of his testimony, in Schedule 12, and in Appendix I, Mr. Moul estimates an equity cost rate for the Company employing the CE approach. His methodology involves averaging historic and prospective returns on common equity for a proxy group of non-utility companies "comparable" in risk to his barometer group as determined from screening *Value Line's* Value Screen database. Mr. Moul screens the database on six risk measures and arrives at a group of 120 unregulated "comparable" companies. The average of the historic and projected median returns on common equity for the group is 15.25%.

This approach is fundamentally flawed for several reasons. He has not performed any analysis to examine whether his return on equity figures are likely measures of long-term earnings expectations. More importantly, however, since Mr. Moul has not evaluated the market-to-book ratios for these companies, he cannot indicate whether the past and projected returns on common equity are above or below investors' requirements. These returns on common equity are excessive if the market-to-book ratios for these companies are above 1.0. For example, Arbitron, the media and marketing research firm, is one of the companies 'comparable' to the Company. The historic return on equity for Arbitron is 96.3%. But, I doubt if any financial analyst, including Mr. Moul, would suggest that the equity cost rate for Arbitron is 96.3%. Indeed, the market-to-book ratio for Arbitron is 15.0X. This indicates that its return on equity is well above its cost of equity capital.

Q. **DOES THIS CONCLUDE YOUR TESTIMONY?**

A. Yes it does.

APPENDIX A

EDUCATIONAL BACKGROUND, RESEARCH, AND RELATED BUSINESS EXPERIENCE

J. RANDALL WOOLRIDGE

J. Randall Woolridge is a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed Faculty Fellow in Business Administration in the College of Business Administration of the Pennsylvania State University in University Park, PA. In addition, Professor Woolridge is Director of the Smeal College Trading Room and President and CEO of the Nittany Lion Fund, LLC.

Professor Woolridge received a Bachelor of Arts degree in Economics from the University of North Carolina, a Master of Business Administration degree from the Pennsylvania State University, and a Doctor of Philosophy degree in Business Administration (major area-finance, minor area-statistics) from the University of Iowa. At Iowa he received a Graduate Fellowship and was awarded membership in Beta Gamma Sigma, a national business honorary society. He has taught Finance courses at the University of Iowa, Cornell College, and the University of Pittsburgh, as well as the Pennsylvania State University. These courses include corporation finance, commercial and investment banking, and investments at the undergraduate, graduate, and executive MBA levels.

Professor Woolridge's research has centered on the theoretical and empirical foundations of corporation finance and financial markets and institutions. He has published over 35 articles in the best academic and professional journals in the field, including the *Journal of Finance,* the *Journal of Financial Economics,* and the *Harvard Business Review.* His research has been cited extensively in the business press. His work has been featured in the *New York Times, Forbes, Fortune, The Economist, Financial World, Barron's, Wall Street Journal, Business Week, Washington Post, Investors' Business Daily, Worth Magazine, USA Today,* and other publications. In addition, Dr. Woolridge has appeared as a guest on CNN's *Money Line* and CNBC's *Morning Call* and *Business Today.*

The second edition of Professor Woolridge's popular stock valuation book, *The StreetSmart Guide to Valuing a Stock* (McGraw-Hill, 2003), was released in its second edition. He has also co-authored *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation, 1999) as well as a new textbook entitled Applied Principles of *Finance* (Kendall Hunt, 2006). Dr. Woolridge is a founder and a managing director of www.valuepro.net - a stock valuation website.

Professor Woolridge has also consulted with and prepared research reports for major corporations, financial institutions, and investment banking firms, and government agencies. In addition, he has directed and participated in over 500 university- and company- sponsored professional development programs for executives in 25 countries in North and South America, Europe, Asia, and Africa.

Dr. Woolridge has prepared testimony and/or provided consultation services in the following cases:

Pennsylvania: Dr. Woolridge has prepared testimony on behalf of the Pennsylvania Office of Consumer Advocate in the following cases before the Pennsylvania Public Utility Commission: Bell Telephone Company (R-811819), Peoples Natural Gas Company (R-832315), Pennsylvania Power Company (R-832409), Western Pennsylvania Water Company (R-832381), Pennsylvania Power Company (R-842740), Pennsylvania Gas and Water Company (R-850178), Metropolitan Edison Company (R-860384), Pennsylvania Electric Company (R-860413), North Penn Gas Company (R-860535), Philadelphia Electric Company (R-870629), Western Pennsylvania Water Company (R-

870825), York Water Company (R-870749), Pennsylvania-American Water Company (R-880916), Equitable Gas Company (R-880971), the Bloomsburg Water Co. (R-891494), Columbia Gas of Pennsylvania, Inc. (R-891468), Pennsylvania-American Water Company (R-90562), Breezewood Telephone Company (R-901666), York Water Company (R-901813), Columbia Gas of Pennsylvania, Inc. (R-901873), National Fuel Electric utility Company (R-911912), Pennsylvania-American Water Company (R-911909), Borough of Media Water Fund (R-912150), UGI Utilities, Inc. - Electric Utility Division (R-922195), Dauphin Consolidated Water Supply Company - General Waterworks of Pennsylvania, Inc, (R-932604), National Fuel Electric utility Company (R-932548), Commonwealth Telephone Company (I-920020), Conestoga Telephone and Telegraph Company (I-920015), Peoples Natural Gas Company (R-932866), Blue Mountain Consolidated Water Company (R-932873), National Fuel Gas Company (R-942991), UGI - Gas Division (R-953297), UGI - Electric Division (R-953534), Pennsylvania-American Water Company (R-973944), Pennsylvania-American Water Company (R-994638), Philadelphia Suburban Water Company (R-994868;R-994877;R-994878; R-9948790), Philadelphia Suburban Water Company (R-994868), Wellsboro Electric Company (R-00016356), Philadelphia Suburban Water Company (R-00016750), National Fuel Electric utility Company (R-00038168), Pennsylvania-American Water Company (R-00038304), York Water Company (R-00049165), Valley Energy Company (R-00049345), Wellsboro Electric Company (R-00049313), National Fuel Gas Utility Corporation (R-00049656), T.W. Phillips Gas and Oil Co. (R-00051178), PG Energy (R-00061365), City of Dubois Water Company (Docket No. R-00050671), R-00049165), York Water Company (R-00061322), and Emporium Water Company (R-00061297).

New Jersey: Dr. Woolridge prepared testimony for the New Jersey Department of the Public Advocate, Division of Rate Counsel: New Jersey-American Water Company (R-91081399J), New Jersey-American Water Company (R-92090908J), and Environmental Disposal Corp (R-94070319).

Alaska: Dr. Woolridge prepared testimony for Attorney General's Office of Alaska: Golden Heart Utilities, Inc. and College Utilities Corp. (Water Public Utility Service TA-29-118 and Sewer Public Utility Service TA-82-97).

Arizona: Dr. Woolridge prepared testimony for Utility Division Staff of the Arizona Corporation Commission, Arizona Public Service Company (Docket No. E-01345A-06-0009).

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Missouri: Dr. Woolridge prepared testimony for the Department of Energy in Missouri: Kansas City Power & Light Company (CASE NO. ER-2006-0314).

Kentucky: Dr. Woolridge prepared testimony for the Office of Attorney General in Kentucky: Kentucky-American Water Company (Case No. 2004-00103), Union Heat, Light, and Power Company (Case No. 2004-00042), Kentucky Power Company (Case No. 2005-00341), Union Heat, Light, and Power Company (Case No. 2006-00172),

Washington, D.C.: Dr. Woolridge prepared testimony for the Office of the People's Counsel in the District of Columbia: Potomac Electric Power Company (Formal Case No. 939).

Washington: Dr. Woolridge consulted with trial staff of the Washington Utilities and Transportation Commission on the following cases: Puget Energy Corp. (Docket Nos. UE-011570 and UG-011571); and Avista Corporation (Docket No. UE-011514).

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FERC: Dr. Woolridge has prepared testimony on behalf of the Pennsylvania Office of Consumer Advocate in the following cases before the Federal Energy Regulatory Commission: National Fuel Gas Supply Corporation (RP-92-73-000) and Columbia Gulf Transmission Company (RP97-52-000).

Vermont: Dr. Woolridge prepared testimony for the Department of Public Service in the Central Vermont Public Service (Docket No. 6988) and Vermont Gas Systems, Inc. (Docket No. 7160).

Exhibit_(JRW-1)

Southern Indiana Gas and Electric Company
Cost of Capital and Fair Rate of Return

Cost of Investor Provided Capital
For the Test Year Ending March 31, 2006

Capital Source	Capitalization Ratio*	Cost Rate*	Weighted Cost Rate
Long-Term Debt	45.10%	6.04%	2.72%
Common Equity	54.90%	9.25%	5.08%
Total	100.00%		7.80%

The Impact of the 2003 Tax Legislation
On the Cost of Equity Capital

On May 28, 2003, President Bush signed the *Jobs and Growth Tax Relief Reconciliation Act of 2003.* The primary purpose of this legislation was to reduce taxes to enhance economic growth. A primary component of the new tax law was a significant reduction in the taxation of corporate dividends for individuals. Dividends have been described as "double-taxed." First, corporations pay taxes on the income they earn before they pay dividends to investors, then investors pay taxes on the dividends that they receive from corporations. One of the implications of the double taxation of dividends is that, all else equal, it results in a high cost of raising capital for corporations.

The new tax legislation reduces the double taxation of dividends by lowering the tax rate on dividends from the 30 percent range (the average tax bracket for individuals) to 15 percent. This reduction in the taxation of dividends for individuals enhances their after-tax returns and thereby reduces their pre-tax required returns. This reduction in pre-tax required returns (due to the lower tax on dividends) effectively reduces the cost of equity capital for companies. The new tax law also reduced the tax rate on long-term capital gains from 20% to 15%.

To demonstrate the effect of the new legislation, assume that a utility has a 10% expected return – 5.0% in dividends and 5.0% in capital gains. The new tax law reduces the double-taxation by reducing the tax rate on dividends from the 30 percent range (the marginal tax bracket for the average individual taxpayer) to 15 percent. The table below illustrates the effect of the new tax law. Panel A shows that under the old tax law a 10.0% pre-tax return provided for a 7.5% after tax return. Panel B shows that under the new tax law, with tax rates of 15% on both dividends and capital gains, the 10% pre-tax return is worth 8.5% on an after-tax basis. In Panel C, I have held the after-tax return constant (at 7.5%) to illustrate the effect of the new tax law on required pre-tax returns. Assuming that the entire after-tax 1% return difference (7.5% to 8.5%) is attributed to the lower taxation of dividends, the 10.0% pre-tax return under the new law is now only 8.82%. In other words, to generate an after-tax return of 7.5%, the new tax law reduced the required pre-tax return from 10.0% to 8.82%.

The Impact of the New Tax Law on Pre- and After- Tax Returns

Panel A
Old Tax Law
10% Pre-Tax Return - 5% Dividend Yield & 5% Capital Gain
Tax Rates - Dividends 30% & Capital Gains 20%

	Pre-Tax Return	Tax Rate	After-Tax Return
Dividends	5.00%	30.00%	3.50%
Capital Gain	5.00%	20.00%	4.00%
Total	10.00%		7.50%

Panel B
New Tax Law
10% Pre-Tax Return - 5% Dividend Yield & 5% Capital Gain
Tax Rates - Dividends 15% & Capital Gains 15%

	Pre-Tax Return	Tax Rate	After-Tax Return
Dividends	5.00%	15.00%	4.25%
Capital Gain	5.00%	15.00%	4.25%
Total	10.00%		8.50%

Panel C
The Effect of the New Tax Law on Pre-Tax Returns
7.50% After-Tax Return - 3.25% Dividend Yield & 4.25% Capital Gain
Tax Rates - Dividends 15% & Capital Gains 15%

	Pre-Tax Return	Tax Rate	After-Tax Return
Dividends	3.82%	15.00%	3.25%
Capital Gain	5.00%	15.00%	4.25%
Total	8.82%		7.50%

Exhibit_(JRW-3)
Southern Indiana Gas and Electric Company

Electric Utility Proxy Group
Summary Financial Statistics

Company		S&P Bond Rating	Operating Revenue ($mil)	Percent Electric Revenue	Net Plant ($mil)	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio*	Return on Equity	Price/ Earnings Ratio	Market to Book Ratio
Alliant Energy Co.	LNT	A-	3,424.9	72%	4,514.7	5.8	WI	55.0%	4.1%	44.9	183
Ameren	AEE	BBB	6,961.0	79%	14,028.0	3.8	MO, IL	51.0%	8.1%	21.7	168
DTE Energy Co.	DTE	BBB+	9,438.0	57%	11,165.0	2.4	MI	41.0%	13.3%	12.9	146
Duke Energy	DUK	BBB	14,464.0	48%	40,803.0	3.5	NC, SC,OH,IN	56.0%	9.9%	20.1	158
FirstEnergy	FE	BBB	11,924.0	82%	14,510.0	4.0	OH,PA, NJ	44.0%	13.3%	16.6	211
MGE Energy	MGEE	AA-	528.5	60%	712.8	4.3	WI	55.0%	11.3%	16.9	172
NiSource Inc.	NI	BBB	8,134.0	16%	9,198.8	2.4	US, Can	43.0%	6.0%	22.4	137
Vectren Corp.	VVC	A	2,146.3	20%	2,336.7	3.2	OH,IN	41.0%	11.1%	4.8	190
Wisconsin Energy	WEC	A-	4,036.2	62%	6,833.0	3.4	WI,MI	42.0%	12.0%	17.5	201
Xcel Energy Inc.	XEL	A-	10,255.8	75%	15,305.7	2.5	MN,WI,MD,SD	44.0%	10.2%	16.9	175
Mean			7,131.3	57%	**11,940.8**	**3.5**		**47.2%**	**9.9%**	**19.5**	174
Median			7,547.5	61%	**10,181.9**	**3.5**		**44.0%**	**10.7%**	**17.2**	174

Data Source: AUS *Utility Reports*, January, 2007, *Value Line Investment Survey*, 2006.

APPENDIX A

EDUCATIONAL BACKGROUND, RESEARCH, AND RELATED BUSINESS EXPERIENCE

J. RANDALL WOOLRIDGE

J. Randall Woolridge is a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed Faculty Fellow in Business Administration in the College of Business Administration of the Pennsylvania State University in University Park, PA. In addition, Professor Woolridge is Director of the Smeal College Trading Room and President and CEO of the Nittany Lion Fund, LLC.

Professor Woolridge received a Bachelor of Arts degree in Economics from the University of North Carolina, a Master of Business Administration degree from the Pennsylvania State University, and a Doctor of Philosophy degree in Business Administration (major area-finance, minor area-statistics) from the University of Iowa. At Iowa he received a Graduate Fellowship and was awarded membership in Beta Gamma Sigma, a national business honorary society. He has taught Finance courses at the University of Iowa, Cornell College, and the University of Pittsburgh, as well as the Pennsylvania State University. These courses include corporation finance, commercial and investment banking, and investments at the undergraduate, graduate, and executive MBA levels.

Professor Woolridge's research has centered on the theoretical and empirical foundations of corporation finance and financial markets and institutions. He has published over 35 articles in the best academic and professional journals in the field, including the *Journal of Finance,* the *Journal of Financial Economics,* and the *Harvard Business Review.* His research has been cited extensively in the business press. His work has been featured in the *New York Times*, *Forbes*, *Fortune*, *The Economist*, *Financial World*, *Barron's*, *Wall Street Journal*, *Business Week*, *Washington Post*, *Investors' Business Daily*, *Worth Magazine*, *USA Today*, and other publications. In addition, Dr. Woolridge has appeared as a guest on CNN's *Money Line* and CNBC's *Morning Call* and *Business Today*.

The second edition of Professor Woolridge's popular stock valuation book, *The StreetSmart Guide to Valuing a Stock* (McGraw-Hill, 2003), was released in its second edition. He has also co-authored *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation, 1999) as well as a new textbook entitled Applied Principles of *Finance* (Kendall Hunt, 2006). Dr. Woolridge is a founder and a managing director of www.valuepro.net - a stock valuation website.

Professor Woolridge has also consulted with and prepared research reports for major corporations, financial institutions, and investment banking firms, and government agencies. In addition, he has directed and participated in over 500 university- and company- sponsored professional development programs for executives in 25 countries in North and South America, Europe, Asia, and Africa.

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Exhibit_(JRW-1)

Southern Indiana Gas and Electric Company
Cost of Capital and Fair Rate of Return

Cost of Investor Provided Capital

For the Test Year Ending March 31, 2006

Capital Source	Capitalization Ratio*	Cost Rate*	Weighted Cost Rate
Long-Term Debt	45.10%	6.04%	2.72%
Common Equity	54.90%	9.25%	5.08%
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**The Impact of the 2003 Tax Legislation
On the Cost of Equity Capital**

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The Impact of the New Tax Law on Pre- and After- Tax Returns

Panel A
Old Tax Law
10% Pre-Tax Return - 5% Dividend Yield & 5% Capital Gain
Tax Rates - Dividends 30% & Capital Gains 20%

	Pre-Tax Return	Tax Rate	After-Tax Return
Dividends	5.00%	30.00%	3.50%
Capital Gain	5.00%	20.00%	4.00%
Total	10.00%		7.50%

Panel B
New Tax Law
10% Pre-Tax Return - 5% Dividend Yield & 5% Capital Gain
Tax Rates - Dividends 15% & Capital Gains 15%

	Pre-Tax Return	Tax Rate	After-Tax Return
Dividends	5.00%	15.00%	4.25%
Capital Gain	5.00%	15.00%	4.25%
Total	10.00%		8.50%

Panel C
The Effect of the New Tax Law on Pre-Tax Returns
7.50% After-Tax Return - 3.25% Dividend Yield & 4.25% Capital Gain
Tax Rates - Dividends 15% & Capital Gains 15%

	Pre-Tax Return	Tax Rate	After-Tax Return
Dividends	3.82%	15.00%	3.25%
Capital Gain	5.00%	15.00%	4.25%
Total	8.82%		7.50%

Exhibit_(JRW-3)
Southern Indiana Gas and Electric Company

Electric Utility Proxy Group
Summary Financial Statistics

Company		S&P Bond Rating	Operating Revenue ($mil)	Percent Electric Revenue	Net Plant ($mil)	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio*	Return on Equity	Price/ Earnings Ratio	Market to Book Ratio
Alliant Energy Co.	LNT	A-	3,424.9	72%	4,514.7	5.8	WI	55.0%	4.1%	44.9	183
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DTE Energy Co.	DTE	BBB+	9,438.0	57%	11,165.0	2.4	MI	41.0%	13.3%	12.9	146
Duke Energy	DUK	BBB	14,464.0	48%	40,803.0	3.5	NC, SC,OH,IN	56.0%	9.9%	20.1	158
FirstEnergy	FE	BBB	11,924.0	82%	14,510.0	4.0	OH,PA, NJ	44.0%	13.3%	16.6	211
MGE Energy	MGEE	AA-	528.5	60%	712.8	4.3	WI	55.0%	11.3%	16.9	172
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Vectren Corp.	VVC	A	2,146.3	20%	2,336.7	3.2	OH,IN	41.0%	11.1%	4.8	190
Wisconsin Energy	WEC	A-	4,036.2	62%	6,833.0	3.4	WI,MI	42.0%	12.0%	17.5	201
Xcel Energy Inc.	XEL	A-	10,255.8	75%	15,305.7	2.5	MN,WI,MD,SD	44.0%	10.2%	16.9	175
Mean			7,131.3	57%	**11,940.8**	**3.5**		**47.2%**	**9.9%**	**19.5**	**174**
Median			7,547.5	61%	**10,181.9**	**3.5**		**44.0%**	**10.7%**	**17.2**	**174**

Data Source: AUS *Utility Reports*, January, 2007, *Value Line Investment Survey*, 2006.

Exhibit_(JRW-4)
Southern Indiana Gas and Electric Company
Capital Structure Ratios

Panel A - Vectren South Recommended Capitalization Ratios

Vectren Corp.	Capitalization Ratios
Short/Current Long-Term Debt	0.00%
Long-Term Debt	45.10%
Common Equity	54.90%
Total Capital	100.00%

Testimony of Robert L. Goocher

Panel B - Vectren Corp. Quarterly Capitalization Ratios

Vectren Corp.	Quarter Ended 9/06	Quarter Ended 06/06	Quarter Ended 03/06	Quarter Ended 12/05	4 QUARTER AVERAGE
Short/Current Long-Term Debt	12.98%	6.84%	6.30%	13.13%	9.81%
Long-Term Debt	45.57%	48.66%	48.32%	44.45%	46.75%
Common Equity	41.46%	44.50%	45.38%	42.42%	43.44%
Total Capital	100.00%	100.00%	100.00%	100.00%	100.00%

Data Source: Yahoo

Panel C - Proxy Group Quarterly Capitalization Ratios

Proxy Group Ten Electric Utility Companies	Quarter Ended 9/06	Quarter Ended 06/06	Quarter Ended 03/06	Quarter Ended 12/05	4 QUARTER AVERAGE
Short/Current Long-Term Debt	12.65%	11.06%	11.98%	13.89%	12.39%
Long-Term Debt	41.11%	41.72%	41.00%	40.97%	41.20%
Preferred Stock	0.81%	0.82%	1.52%	0.89%	1.01%
Common Equity	45.42%	46.40%	45.50%	44.25%	45.39%
Total Capital	100%	100.0%	100.0%	100.0%	100.0%

Data Source: Bloomberg

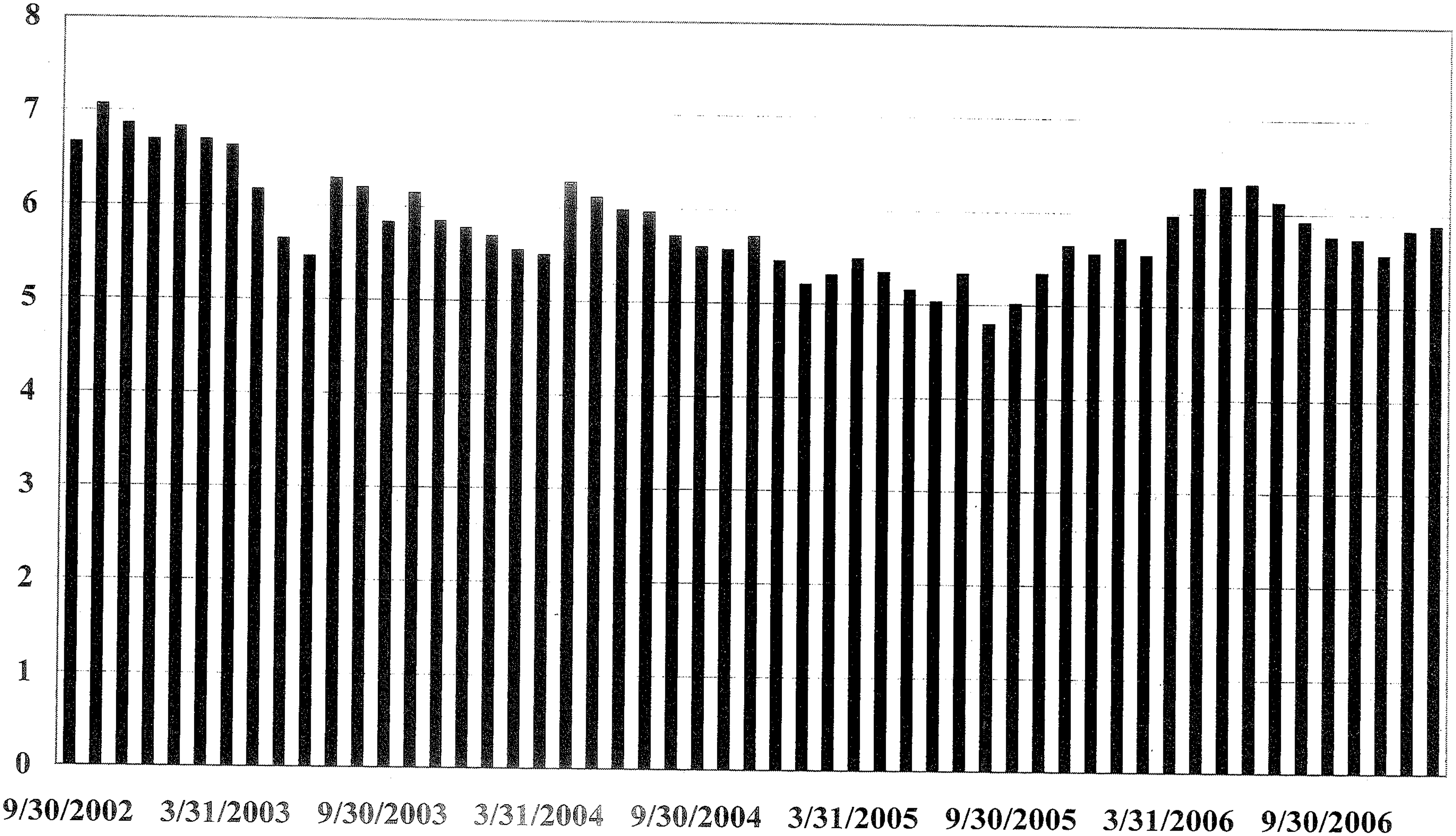
Panel D - Vectren South Capitalization Ratios for Ratemaking Purposes

Vectren Corp.	Capitalization Ratios
Long-Term Debt	38.65%
Common Equity	47.05%
Customer Deposits	0.48%
Cost-free Capital	13.06%
JDITC	0.76%
Total Capital	**100.00%**

Testimony of Robert L. Goocher

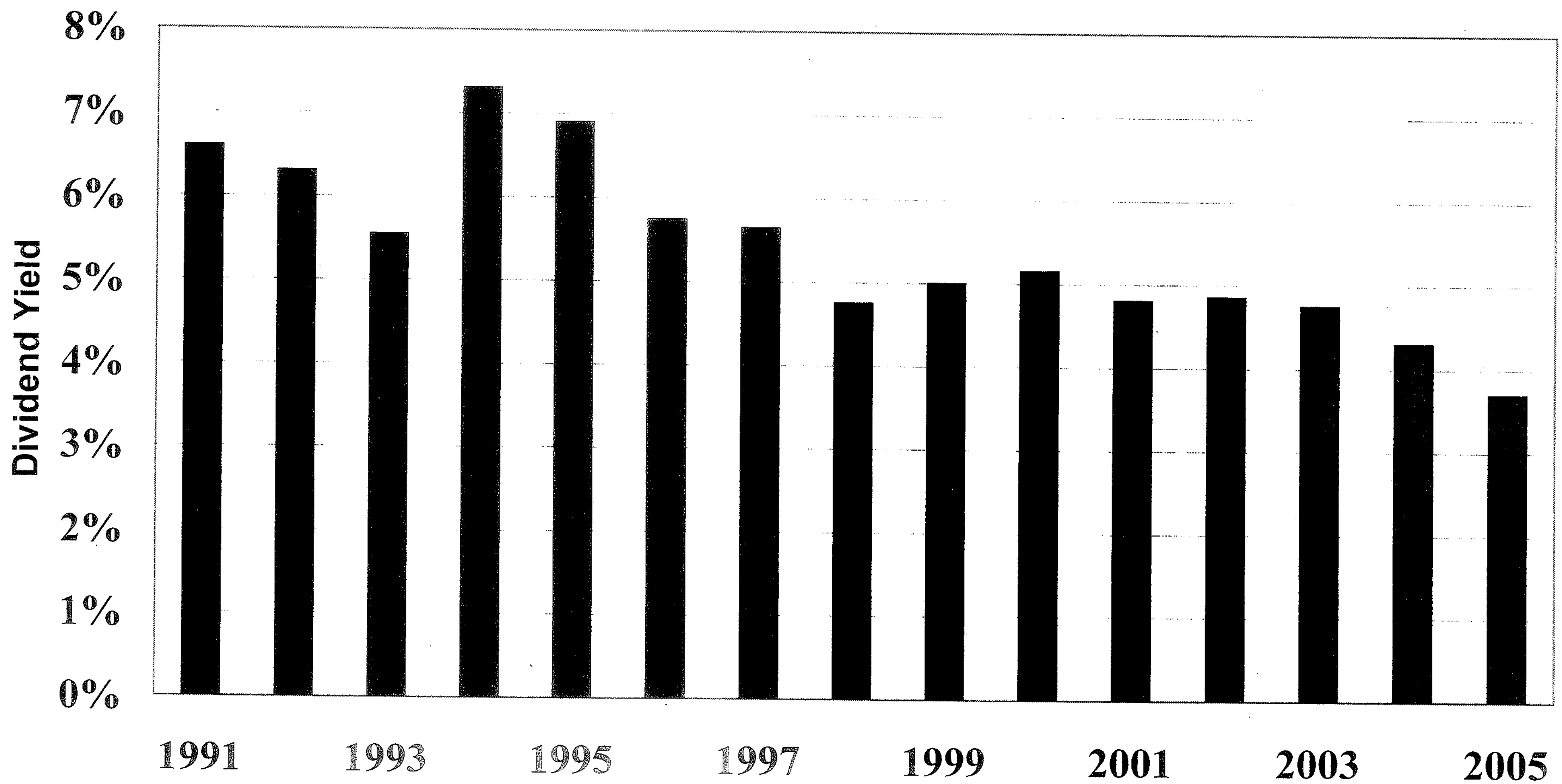
Exhibit_(JRW-5)

Long-Term 'A' Rated Public Utility Bonds



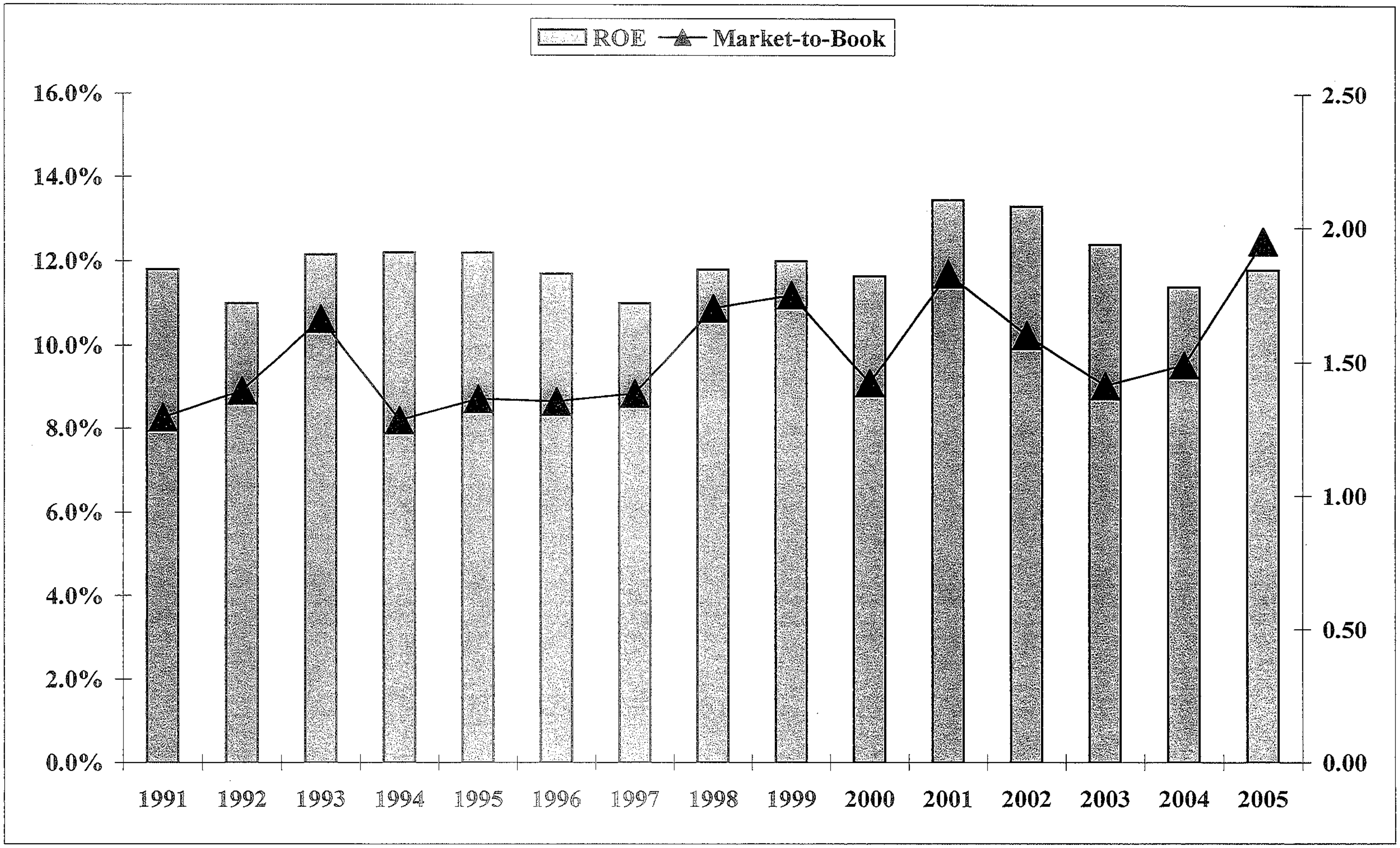
Data Source: Bloomberg (FMCI Function).

Exhibit_(JRW-5)
Dow Jones Utilities Dividend Yield



Data Source: *Value Line Investment Survey*

Exhibit_(JRW-5)
Dow Jones Utilities - Market to Book and ROE



Data Source: *Value Line Investment Survey*

Exhibit_(JRW-6)

Industry Average Betas

Industry Name	Number of Firms	Beta	Industry Name	Number of Firms	Beta	Industry Name	Number of Firms	Beta
Semiconductor Equip	14	2.95	Retail Automotive	15	1.04	Publishing	50	0.89
Semiconductor	124	2.92	Grocery	19	1.04	Petroleum (Producing)	178	0.88
Wireless Networking	73	2.41	Foreign Electronics	10	1.03	Diversified Co.	134	0.87
Power	41	2.39	Office Equip/Supplies	26	1.02	Electric Utility (East)	29	0.87
Telecom. Equipment	136	2.35	Cement & Aggregates	13	1.02	Furn/Home Furnishings	38	0.87
Internet	329	2.30	Information Services	41	1.02	Environmental	96	0.87
E-Commerce	60	2.23	Metal Fabricating	37	1.01	Packaging & Container	36	0.87
Entertainment Tech	31	2.18	Natural Gas (Div.)	34	1.01	Maritime	46	0.86
Computers/Peripherals	148	1.99	Industrial Services	230	1.01	Home Appliance	14	0.84
Computer Software/Svcs	425	1.84	Machinery	139	1.01	Paper/Forest Products	42	0.84
Bank (Foreign)	4	1.78	Utility (Foreign)	6	1.00	Toiletries/Cosmetics	21	0.83
Cable TV	23	1.76	Auto Parts	64	0.99	Insurance (Prop/Cas.)	97	0.83
Coal	16	1.75	Advertising	36	0.99	Restaurant	81	0.80
Precision Instrument	104	1.71	Manuf. Housing/RV	19	0.99	Bank (Midwest)	37	0.79
Drug	334	1.59	Homebuilding	41	0.98	Tobacco	11	0.79
Biotechnology	105	1.56	Chemical (Specialty)	94	0.98	Household Products	31	0.79
Electrical Equipment	94	1.52	Trucking	38	0.98	R.E.I.T.	143	0.77
Steel (Integrated)	16	1.50	Retail (Special Lines)	164	0.98	Hotel/Gaming	84	0.77
Electronics	186	1.49	Building Materials	47	0.98	Newspaper	18	0.76
Telecom. Services	173	1.43	Chemical (Basic)	24	0.98	Investment Co.	20	0.75
Air Transport	56	1.38	Electric Utility (West)	16	0.97	Canadian Energy	14	0.73
Entertainment	101	1.30	Chemical (Diversified)	36	0.97	Natural Gas (Distrib.)	30	0.73
Securities Brokerage	32	1.29	Tire & Rubber	10	0.96	Water Utility	16	0.73
Auto & Truck	31	1.29	Railroad	20	0.96	Food Processing	123	0.72
Human Resources	35	1.22	Petroleum (Integrated)	30	0.96	Bank (Canadian)	7	0.72
Healthcare Information	34	1.22	Retail Building Supply	9	0.95	Food Wholesalers	21	0.72
Investment Co.(Foreign)	15	1.21	Medical Services	186	0.94	Beverage (Soft Drink)	21	0.71
Steel (General)	30	1.16	Retail Store	51	0.94	Beverage (Alcoholic)	27	0.66
Recreation	84	1.12	Electric Util. (Central)	24	0.94	Bank	550	0.59
Medical Supplies	279	1.11	Pharmacy Services	20	0.93	Thrift	248	0.56
Educational Services	37	1.09	Insurance (Life)	40	0.93	Market	7661	1.14
Shoe	24	1.08	Apparel	64	0.93			
Other	1	1.06	Aerospace/Defense	73	0.92			
Oilfield Svcs/Equip.	110	1.05	Precious Metals	67	0.90			
Metals & Mining (Div.)	82	1.04	Financial Svcs. (Div.)	269	0.89			

Data Source: http://pages.stern.nyu.edu/~adamodar/

Exhibit_(JRW-7)

Southern Indiana Gas and Electric Company

Discounted Cash Flow Analysis

Electric Utility Proxy Group

Dividend Yield*	3.90%
Adjustment Factor	1.02625
Adjusted Dividend Yield	4.00%
Growth Rate**	5.25%
Equity Cost Rate	**9.25%**

* Page 2 of Exhibit_(JRW-7)

** Based on data provided on pages 3-5, Exhibit_(JRW-7)

Exhibit_(JRW-7)

Southern Indiana Gas and Electric Company

Monthly Dividend Yields
September 2006 - February 2007

Electric Utility Proxy Group

Company	Sep	Oct	Nov	Dec	Jan	Feb	Mean
Alliant Energy Co.	3.3%	3.2%	3.0%	2.9%	3.0%	3.2%	**3.1%**
Ameren	4.9%	4.8%	4.7%	4.7%	4.7%	4.8%	**4.8%**
DTE Energy Co.	5.0%	5.1%	4.6%	4.4%	4.4%	4.6%	**4.7%**
Duke Energy	4.1%	4.1%	4.0%	3.9%	3.9%	4.5%	**4.1%**
FirstEnergy	3.2%	3.2%	3.1%	3.1%	3.0%	3.4%	**3.2%**
MGE Energy	4.3%	4.1%	4.1%	4.1%	3.9%	4.1%	**4.1%**
NiSource Inc.	4.3%	4.3%	4.0%	3.9%	3.8%	3.9%	**4.0%**
Vectren Corp.	4.5%	4.7%	4.3%	4.4%	4.4%	4.5%	**4.5%**
Wisconsin Energy	2.2%	2.2%	2.2%	2.0%	1.9%	2.0%	**2.1%**
Xcel Energy Inc.	4.3%	4.3%	4.1%	3.9%	3.8%	3.9%	**4.1%**
Mean	4.0%	4.0%	3.8%	3.7%	3.7%	3.9%	**3.9%**

Data Source: *AUS Utility Reports* , monthly issues.

Exhibit_(JRW-7)

Southern Indiana Gas and Electric Company

DCF Equity Cost Growth Rate Measures
Value Line Historic Growth Rates

Electric Utility Proxy Group

Company	Sym	*Value Line* Historic Growth					
		Past 10 Years			Past 5 Years		
		Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
Alliant Energy Co.	LNT	-1.50%	-6.00%	1.00%	-1.00%	-12.50%	-2.50%
Ameren	AEE	0.50%	0.50%	3.00%	0.50%	--	5.00%
DTE Energy Co.	DTE	-0.50%	--	3.50%	-2.00%	--	3.50%
Duke Energy	DUK	-1.00%	1.50%	4.00%	-6.50%	0.50%	6.00%
FirstEnergy	FE	2.00%	1.50%	5.50%	--	2.50%	6.00%
MGE Energy	MGEE	1.50%	1.00%	2.50%	4.00%	1.00%	5.00%
NiSource Inc.	NI	1.50%	3.00%	7.50%	--	1.00%	7.00%
Vectren Corp.	VVC	--	--	--	4.00%	3.50%	4.50%
Wisconsin Energy	WEC	1.50%	-5.00%	3.00%	7.50%	-11.00%	5.00%
Xcel Energy Inc.	XEL	-3.50%	-5.00%	-1.00%	-5.50%	-11.00%	-4.50%
Mean		**0.1%**	**-1.1%**	**3.2%**	**0.1%**	**-3.3%**	**3.5%**
Median		**0.5%**	**0.8%**	**3.0%**	**-0.3%**	**0.8%**	**5.0%**
		Average of Mean and Median Figures =			**1.0%**		

Data Source: *Value Line Investment Survey, December, 2006.*

Exhibit_(JRW-7)

Southern Indiana Gas and Electric Company

DCF Equity Cost Growth Rate Measures
Value Line Projected Growth Rates

Electric Utility Proxy Group

Company	Sym	*Value Line* Projected Growth Est'd. '03-'05 to '09-'11 Earnings	Dividends	Book Value	*Value Line* Internal Growth Return on Equity	Retention Rate	Internal Growth
Alliant Energy Co.	LNT	5.50%	7.50%	3.50%	9.50%	43.00%	4.09%
Ameren	AEE	1.00%	Nil	3.00%	9.00%	20.00%	1.80%
DTE Energy Co.	DTE	3.00%	2.00%	2.00%	9.50%	34.00%	3.23%
Duke Energy	DUK	9.50%	5.00%	5.50%	9.50%	30.00%	2.85%
FirstEnergy	FE	12.50%	5.50%	6.50%	12.50%	50.00%	6.25%
MGE Energy	MGEE	6.00%	0.50%	7.00%	12.00%	37.00%	4.44%
NiSource Inc.	NI	3.50%	0.50%	3.00%	8.50%	44.00%	3.74%
Vectren Corp.	VVC	3.00%	3.00%	3.00%	11.00%	27.00%	2.97%
Wisconsin Energy	WEC	6.50%	4.50%	6.00%	10.50%	66.00%	6.93%
Xcel Energy Inc.	XEL	6.00%	5.50%	3.50%	11.00%	37.00%	4.07%
Mean		**5.7%**	**3.8%**	**4.3%**	**10.3%**	**38.8%**	**4.0%**
Median		**5.8%**	**4.5%**	**3.5%**	**10.0%**	**37.0%**	**3.9%**
Average of Mean and Median Figures =			**4.6%**		**11.0%**	Average =	**4.0%**

Data Source: *Value Line Investment Survey, December, 2006*

Exhibit_(JRW-7)

Southern Indiana Gas and Electric Company
DCF Equity Cost Growth Rate Measures
Analysts Projected EPS Growth Rate Estimates

Electric Utility Proxy Group

Company	Sym	Yahoo First Call	Reuters	Zack's	Average
Alliant Energy Co.	LNT	6.0%	5.0%	4.0%	5.0%
Ameren	AEE	5.0%	7.0%	6.1%	6.0%
DTE Energy Co.	DTE	6.5%	5.5%	5.7%	5.9%
Duke Energy	DUK	5.0%	5.4%	5.3%	5.2%
FirstEnergy	FE	5.0%	6.2%	5.8%	5.7%
MGE Energy	MGEE	--	--	--	--
NiSource Inc.	NI	3.5%	3.4%	3.3%	3.4%
Vectren Corp.	VVC	4.0%	4.0%	4.0%	4.0%
Wisconsin Energy	WEC	8.0%	8.0%	7.8%	7.9%
Xcel Energy Inc.	XEL	6.0%	5.1%	4.3%	5.1%
Mean		5.4%	5.5%	5.1%	5.4%
Median		5.0%	5.4%	5.3%	5.2%

Data Sources: www.zacks.com, www.investor.reuters.com, http://quote.yahoo.com. Jan 13th, Jan 15th

Exhibit_(JRW-8)

Southern Indiana Gas and Electric Company

Capital Asset Pricing Model

Electric Utility Proxy Group

Risk-Free Interest Rate	**5.00%**
Beta*	**0.88**
Ex Ante Equity Risk Premium**	**4.15%**
CAPM Cost of Equity	**8.7%**

* See page 2 of Exhibit_(JRW-8)
** See page 3 of Exhibit_(JRW-8)

Exhibit_(JRW-8)

Southern Indiana Gas and Electric Company
Beta

Electric Utility Proxy Group

Company		Beta
Alliant Energy Co.	LNT	0.90
Ameren	AEE	0.75
DTE Energy Co.	DTE	0.75
Duke Energy	DUK	1.30
Energy East Copr.	EAS	0.90
MGE Energy	MGEE	0.75
FirstEnergy	FE	0.80
NiSource Inc.	NI	0.95
Vectren Corp.	VVC	0.90
Wisconsin Energy	WEC	0.80
Xcel Energy Inc.	XEL	0.90
Mean		0.88

Data Source: *Value Line Investment Survey, December , 2006.*

Exhibit_(JRW-8)

Southern Indiana Gas and Electric Company
Capital Asset Pricing Model
Equity Risk Premium

Category	Study Authors		Range Low	Range High	Mean of Range	Mean	Category Average
Historic							
	Ibbotson	Arithmetic			6.50%	5.70%	
		Geometric			4.90%		
	AVERAGE						5.70%
Puzzle Research							
	Claus Thomas					3.00%	
	Arnott and Bernstein					2.40%	
	Constantinides					6.90%	
	Cornell		3.50%	7.00%	5.25%		
	Dimson, Marsh, and Staunton	Arithmetic	2.50%	4.00%	3.81%	4.35%	
		Geometric	3.50%	5.25%			
	Fama French		2.55%	4.32%		3.44%	
	Harris & Marston					7.14%	
	Siegel	Geometric				2.50%	
	AVERAGE						4.25%
Surveys							
	Survey of Financial Forecasters					2.50%	
	Graham and Harvey - CFOs					3.80%	
	Welch - Academics		5.00%	5.50%		5.25%	
	AVERAGE						3.85%
Social Security							
	Office of Chief Actuary		4.00%	4.70%			
	John Campbell		2.00%	3.50%			
	Peter Diamond		3.00%	4.80%			
	John Shoven		3.00%	3.50%		3.56%	
	AVERAGE						3.56%
Building Block							
	Ibbotson and Peng						
		Arithmetic			6.00%	5.00%	
		Geometric			4.00%		
	Woolridge					2.63%	
	AVERAGE						3.82%
Other Studies							
	McKinsey		3.50%	4.00%		3.75%	
	AVERAGE						3.75%
OVERALL AVERAGE							**4.15%**

Sources:

Ibbotson Associates, SBBI Yearbook, 2006.
James Claus and Jacob Thomas, "Equity Risk Premia as Low as Three Percent? Empirical Evidence from Analysts' Earnings Forecasts for Domestic and International Stock Market," *Journal of Finance*. (October 2001).
Eugene F. Fama and Kenneth R. French, "The Equity Premium," *The Journal of Finance*, April 2002.
Elroy Dimson, Paul Marsh, and Mike Staunton, "New Evidence puts Risk Premium in Context," *Corporate Finance* (March 2003)
Ivo Welch, "The Equity Risk Premium Consensus Forecast Revisited," (September 2001). Cowles Foundation Discussion Paper No. 1325.
John R. Graham and Campbell Harvey, "Expectations of Equity Risk Premia, Volatility, and Asymmetry," Duke University Working Paper, 2003.
Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, February 13, 2007.
Marc H. Goedhart, Timothy M. Koller, and Zane D. Williams, "The Real Cost of Equity," *McKinsey on Finance* (Autumn 2002), p.14.
Roger Ibbotson and Peng Chen, "Long Run Returns: Participating in the Real Economy," *Financial Analysts Journal*, January 2003

Exhibit_(JRW-8)

Survey of Professional Forecasters
Philadelphia Federal Reserve Bank
Long-Term Forecasts

TABLE FIVE
LONG-TERM (10 YEAR) FORECASTS

SERIES: CPI INFLATION RATE	
STATISTIC	
MINIMUM	1.690
LOWER QUARTILE	2.200
MEDIAN	2.350
UPPER QUARTILE	2.600
MAXIMUM	4.000
MEAN	2.410
STD. DEV.	0.400
N	46
MISSING	3

SERIES: REAL GDP GROWTH RATE	
STATISTIC	
MINIMUM	2.500
LOWER QUARTILE	2.810
MEDIAN	3.000
UPPER QUARTILE	3.200
MAXIMUM	3.500
MEAN	3.010
STD. DEV.	0.220
N	44
MISSING	5

SERIES: PRODUCTIVITY GROWTH	
STATISTIC	
MINIMUM	1.200
LOWER QUARTILE	2.000
MEDIAN	2.200
UPPER QUARTILE	2.300
MAXIMUM	3.000
MEAN	2.150
STD. DEV.	0.320
N	0
MISSING	11

SERIES: STOCK RETURNS (S&P 500)	
STATISTIC	
MINIMUM	5.000
LOWER QUARTILE	6.400
MEDIAN	7.500
UPPER QUARTILE	8.130
MAXIMUM	15.000
MEAN	7.680
STD. DEV.	2.050
N	32
MISSING	17

SERIES: BOND RETURNS (10-YEAR)	
STATISTIC	
MINIMUM	2.000
LOWER QUARTILE	5.000
MEDIAN	5.000
UPPER QUARTILE	5.200
MAXIMUM	6.000
MEAN	5.000
STD. DEV.	0.600
N	39
MISSING	10

SERIES: BILL RETURNS (3-MONTH)	
STATISTIC	
MINIMUM	3.000
LOWER QUARTILE	4.000
MEDIAN	4.500
UPPER QUARTILE	4.680
MAXIMUM	6.000
MEAN	4.330
STD. DEV.	0.670
N	39
MISSING	10

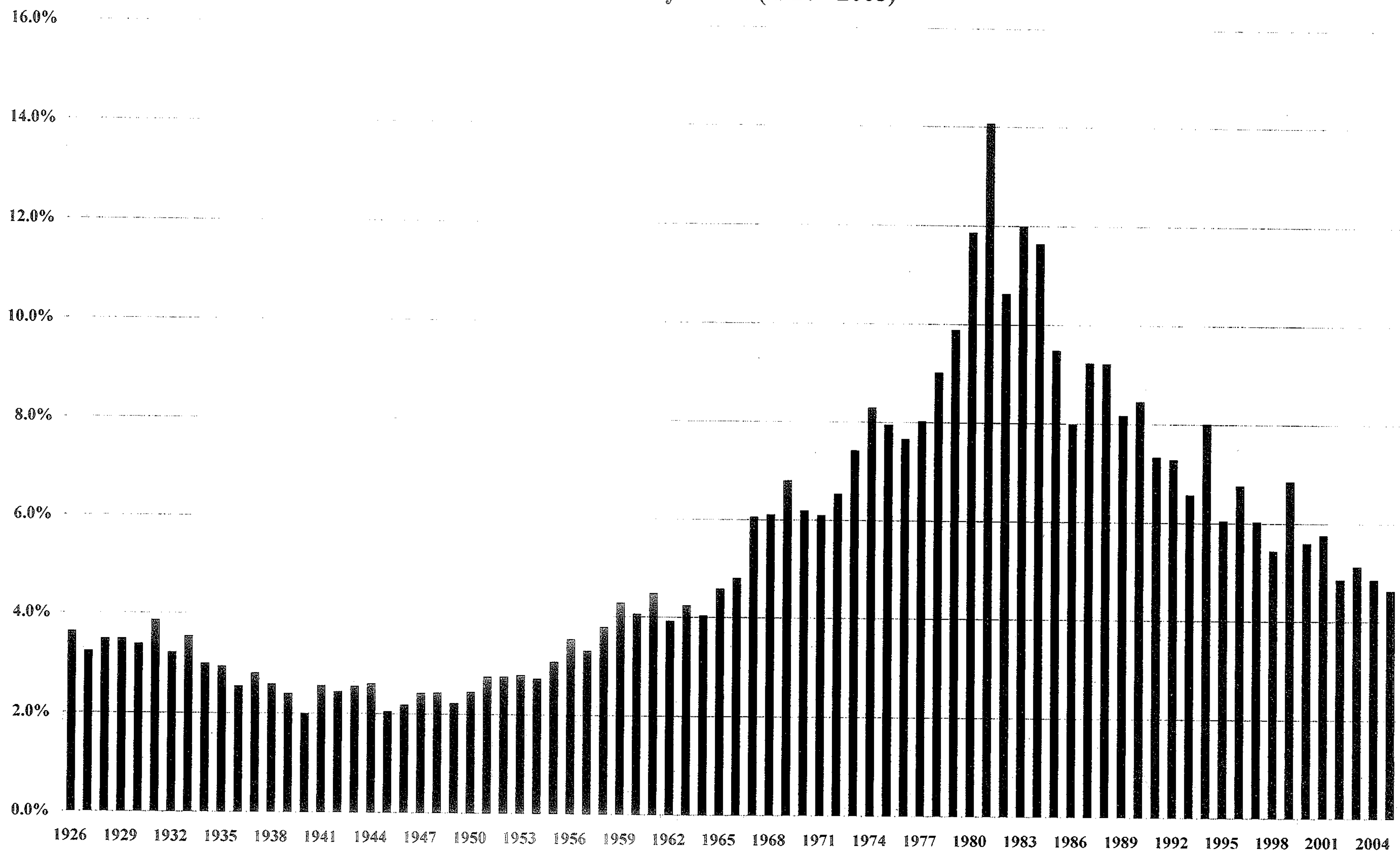
Source: Philadelphia Federal Researve Bank, Survey of Professional Forecasters, February 13, 2007.
http://www.phil.frb.org/files/spf/spfq107.pdf

Exhibit_(JRW-8)

Southern Indiana Gas and Electric Company
CAPM
Real S&P 500 EPS Growth Rate

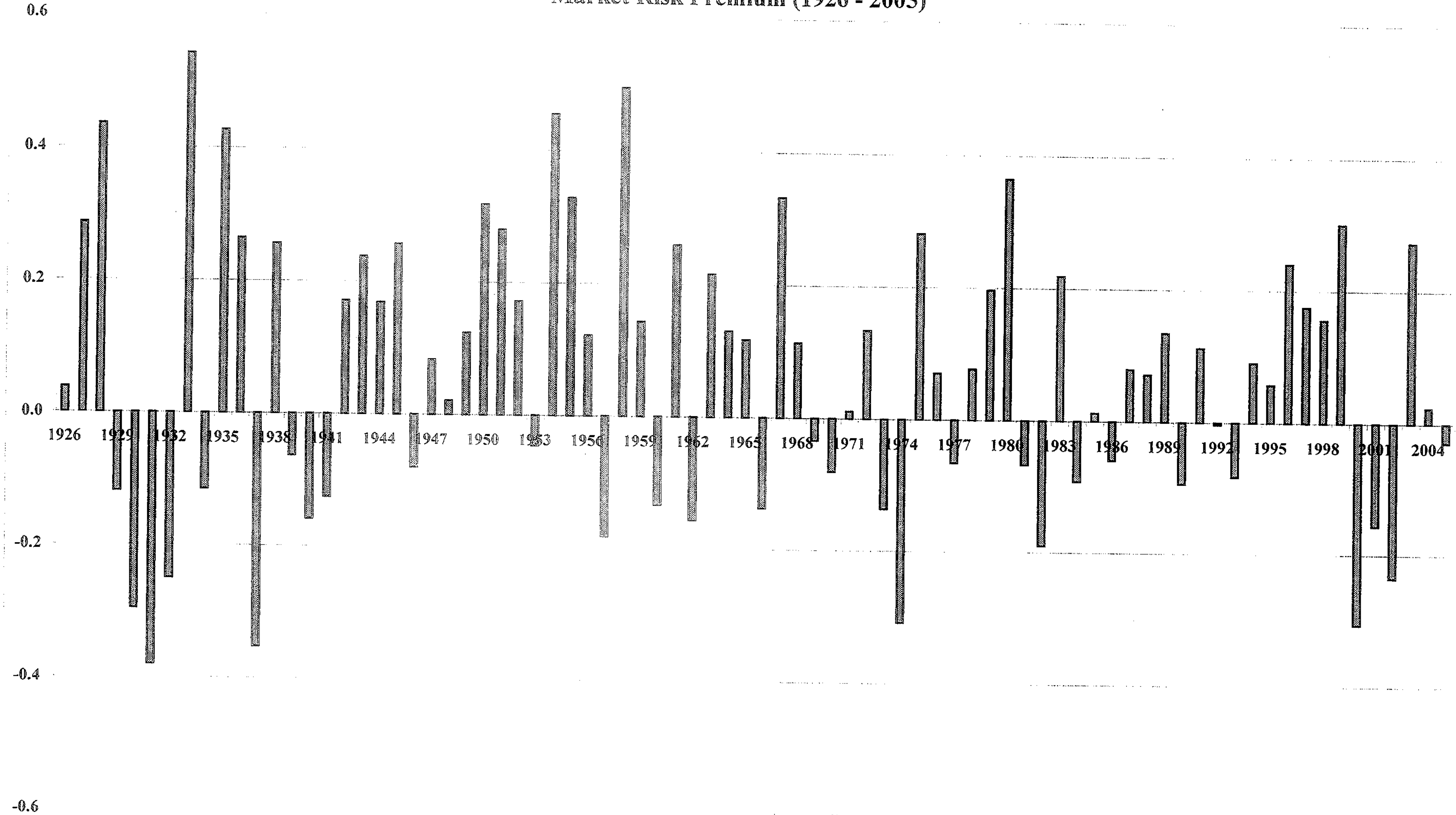
Year	S&P 500 EPS	nnual Inflatio CPI	Inflation Adjustment Factor	Real S&P 500 EPS	
1960	3.10	1.40		3.10	
1961	3.37	0.70	1.01	3.35	
1962	3.67	1.30	1.02	3.59	
1963	4.13	1.60	1.04	3.99	
1964	4.76	1.00	1.05	4.55	
1965	5.30	1.90	1.07	4.97	
1966	5.41	3.50	1.10	4.90	
1967	5.46	3.00	1.14	4.80	
1968	5.72	4.70	1.19	4.81	
1969	6.10	6.20	1.26	4.83	10-Year
1970	5.51	5.60	1.34	4.13	2.89%
1971	5.57	3.30	1.38	4.04	
1972	6.17	3.40	1.43	4.33	
1973	7.96	8.70	1.55	5.13	
1974	9.35	12.30	1.74	5.37	
1975	7.71	6.90	1.86	4.14	
1976	9.75	4.90	1.95	4.99	
1977	10.87	6.70	2.08	5.22	
1978	11.64	9.00	2.27	5.13	
1979	14.55	13.30	2.57	5.66	10-Year
1980	14.99	12.50	2.89	5.18	2.30%
1981	15.18	8.90	3.15	4.82	
1982	13.82	3.80	3.27	4.23	
1983	13.29	3.80	3.40	3.91	
1984	16.84	3.90	3.53	4.77	
1985	15.68	3.80	3.66	4.28	
1986	14.43	1.10	3.70	3.90	
1987	16.04	4.40	3.87	4.15	
1988	22.77	4.40	4.04	5.64	
1989	24.03	4.60	4.22	5.69	10-Year
1990	21.73	6.10	4.48	4.85	-0.65%
1991	19.10	3.10	4.62	4.14	
1992	18.13	2.90	4.75	3.81	
1993	19.82	2.70	4.88	4.06	
1994	27.05	2.70	5.01	5.40	
1995	35.35	2.50	5.14	6.88	
1996	35.78	3.30	5.31	6.74	
1997	39.56	1.70	5.40	7.33	
1998	38.23	1.60	5.48	6.97	
1999	45.17	2.70	5.63	8.02	10-Year
2000	52.00	3.40	5.82	8.93	6.29%
2001	44.23	1.60	5.92	7.48	
2002	47.24	2.40	6.06	7.80	
2003	54.15	1.90	6.17	8.77	
2004	67.01	3.26	6.37	10.51	5-Year
2005	68.32	3.52	6.60	10.35	3.00%
2006	81.96	2.50	6.76	12.12	
Data Source: http://pages.stern.ny u.edu/~adam odar/				Real EPS Growth	**3.0%**

LT US Treasury Yields (1926 - 2005)



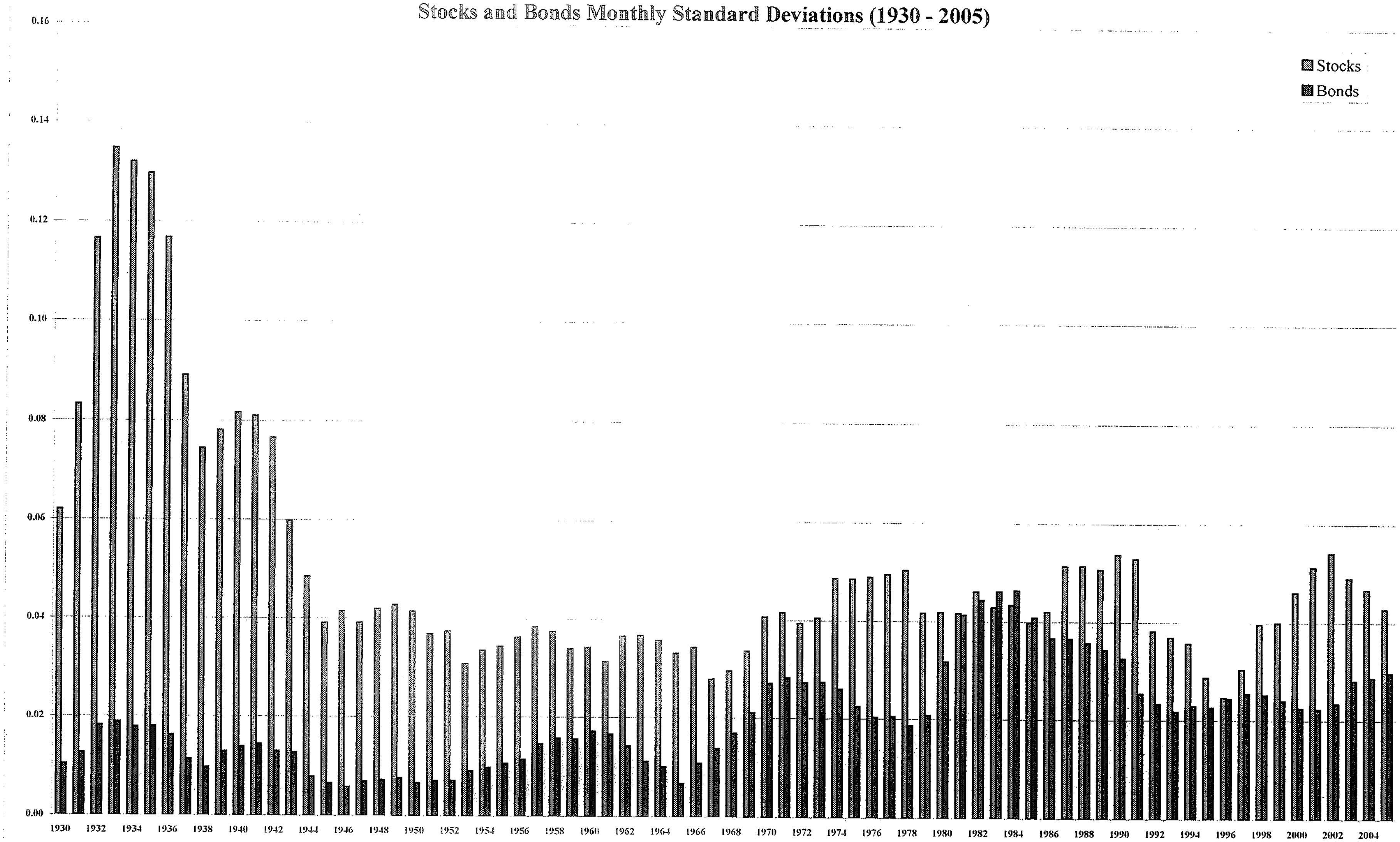
Data Source: Ibbotson Associates, SBBI Yearbook, 2006.

Market Risk Premium (1926 - 2005)



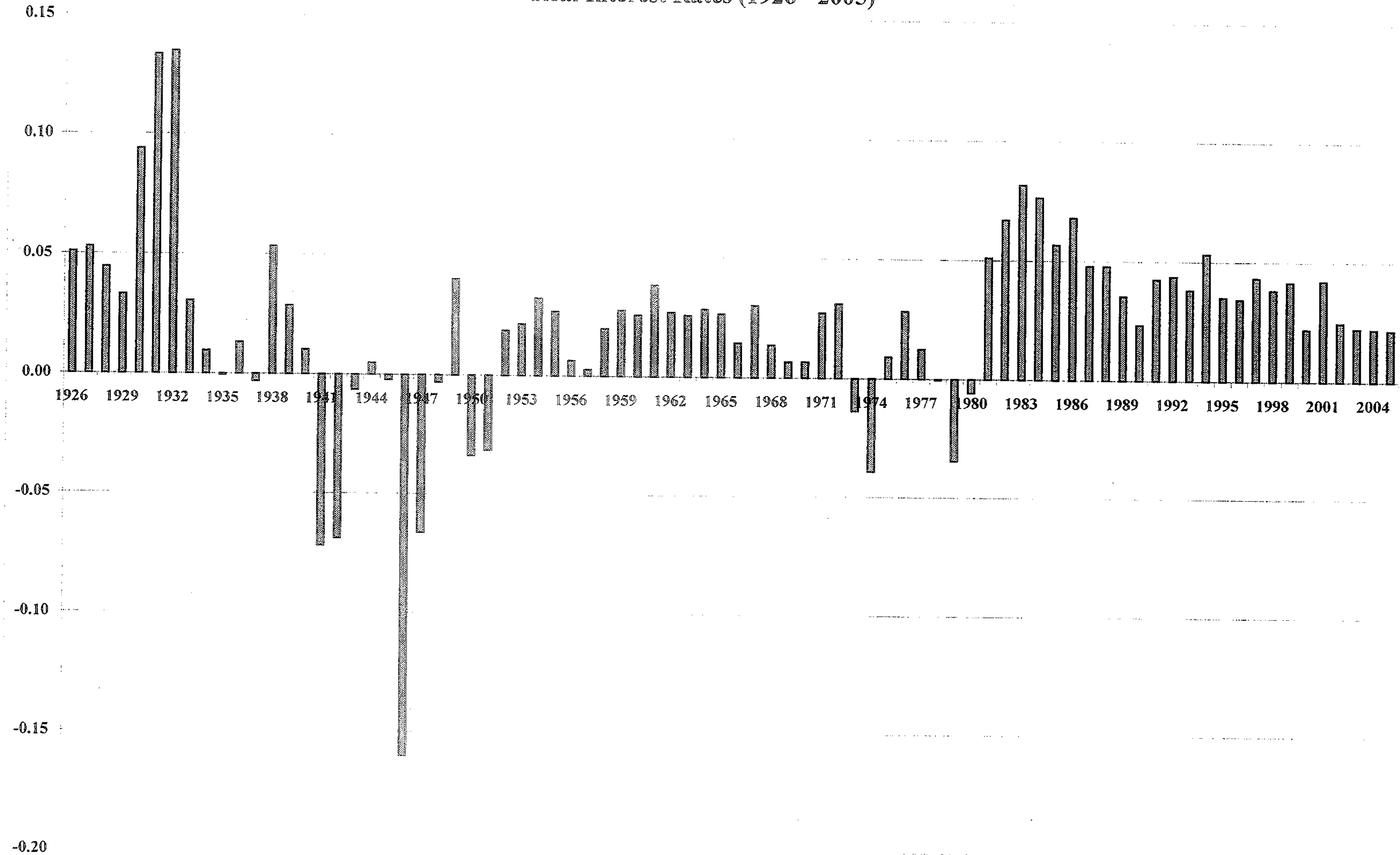
Data Source: Ibbotson Associates, SBBI Yearbook, 2006.

Stocks and Bonds Monthly Standard Deviations (1930 - 2005)



Data Source: Ibbotson Associates, SBBI Yearbook, 2006.

Real Interest Rates (1926 - 2005)



Data Source: Ibbotson Associates, SBBI Yearbook, 2006.

Exhibit_(JRW-10)

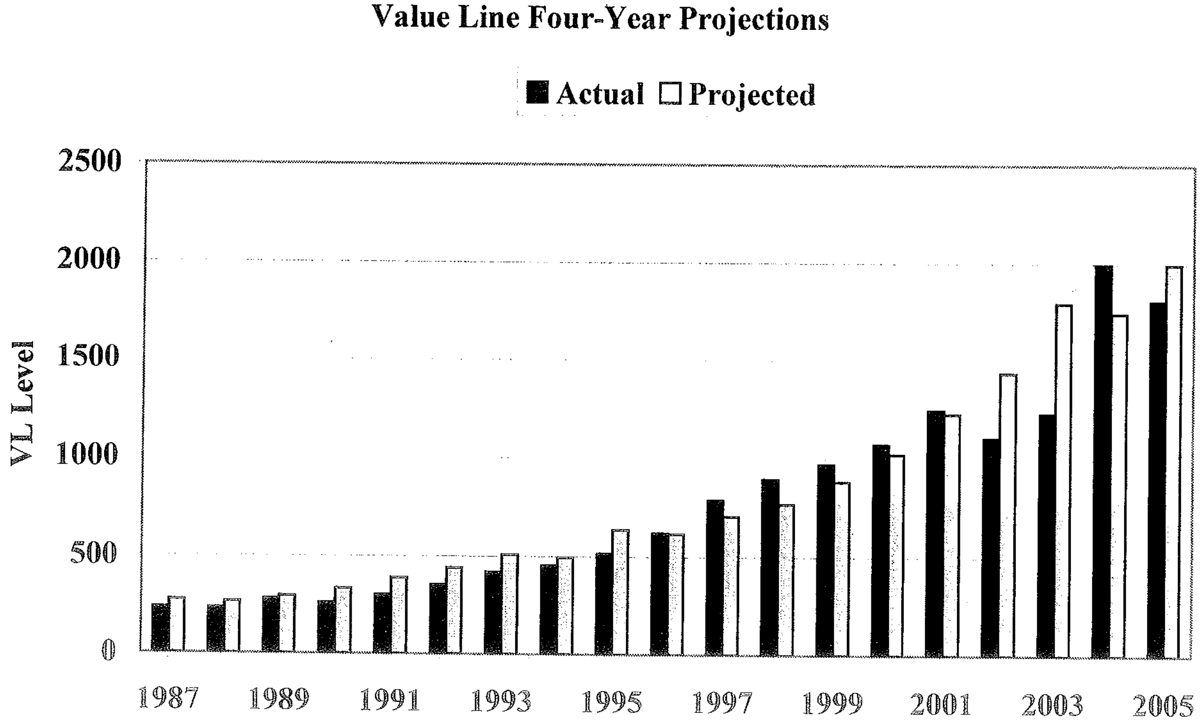
Southern Indiana Gas and Electric Company
Value Line Projected Return Study

	Value Line Projected Four-Year Return	S&P 500 Actual One-Year Return	S&P 500 Actual Four-Year Return	Value Line - S&P 500 Four-Year Return
1984	23.30%	6.27%	14.99%	8.31%
1985	20.03%	31.73%	17.69%	2.34%
1986	14.38%	18.67%	17.68%	-3.30%
1987	14.68%	5.25%	11.87%	2.82%
1988	18.67%	16.61%	18.04%	0.63%
1989	16.80%	31.69%	15.69%	1.11%
1990	20.88%	-3.11%	10.62%	10.26%
1991	19.00%	30.47%	11.87%	7.13%
1992	17.70%	7.62%	13.36%	4.34%
1993	14.96%	10.08%	17.20%	-2.24%
1994	15.61%	1.32%	22.96%	-7.35%
1995	15.14%	37.58%	30.51%	-15.37%
1996	13.19%	22.96%	26.39%	-13.20%
1997	13.20%	33.36%	17.20%	-4.00%
1998	9.91%	28.58%	5.66%	4.24%
1999	14.23%	21.04%	-6.78%	21.01%
2000	18.57%	-9.11%	-5.34%	23.91%
2001	17.20%	-11.88%	-0.52%	17.72%
2002		-22.10%		
2003		28.70%		
2004		10.87%		
Average Projected - Actual Return				3.24%

Data Source: *Value Line Investment Survey*, various issues.

Exhibit_(JRW-10)

Southern Indiana Gas and Electric Company
Value Line Projected Four-year Returns



Data Source: *Value Line website*.

Southern Indiana Gas and Electric Company

Growth Rates

GNP, S&P 500 Price, EPS, and DPS

	GNP	S&P 500	Earnings	Dividends	
1960	529.5	58.11	3.10	1.98	
1961	548.2	71.55	3.37	2.04	
1962	589.7	63.10	3.67	2.15	
1963	622.2	75.02	4.13	2.35	
1964	668.5	84.75	4.76	2.58	
1965	724.4	92.43	5.30	2.83	
1966	792.9	80.33	5.41	2.88	
1967	838.0	96.47	5.46	2.98	
1968	916.1	103.86	5.72	3.04	
1969	990.7	92.06	6.10	3.24	
1970	1044.9	92.15	5.51	3.19	
1971	1134.7	102.09	5.57	3.16	
1972	1246.8	118.05	6.17	3.19	
1973	1395.3	97.55	7.96	3.61	
1974	1515.5	68.56	9.35	3.72	
1975	1651.3	90.19	7.71	3.73	
1976	1842.1	107.46	9.75	4.22	
1977	2051.2	95.10	10.87	4.86	
1978	2316.3	96.11	11.64	5.18	
1979	2595.3	107.94	14.55	5.97	
1980	2823.7	135.76	14.99	6.44	
1981	3161.4	122.55	15.18	6.83	
1982	3291.5	140.64	13.82	6.93	
1983	3573.8	164.93	13.29	7.12	
1984	3969.5	167.24	16.84	7.83	
1985	4246.8	211.28	15.68	8.20	
1986	4480.6	242.17	14.43	8.19	
1987	4757.4	247.08	16.04	9.17	
1988	5127.4	277.72	22.77	10.22	
1989	5510.6	353.40	24.03	11.73	
1990	5837.9	330.22	21.73	12.35	
1991	6026.3	417.09	19.10	12.97	
1992	6367.4	435.71	18.13	12.64	
1993	6689.3	466.45	19.82	12.69	
1994	7098.4	459.27	27.05	13.36	
1995	7433.4	615.93	35.35	14.17	
1996	7851.9	740.74	35.78	14.89	
1997	8337.3	970.43	39.56	15.52	
1998	8768.3	1229.23	38.23	16.20	
1999	9302.2	1469.25	45.17	16.71	
2000	9855.9	1320.28	52.00	16.27	
2001	10171.6	1148.09	44.23	15.74	
2002	10500.2	879.82	47.24	16.08	
2003	11017.6	1111.91	54.15	17.88	
2004	11758.7	1211.92	67.01	19.41	
2005	12487.7	1248.29	68.32	22.38	**Average**
2006		1418.30	81.96	25.05	
Growth	**7.28%**	**7.19%**	**7.38%**	**5.67%**	**6.88%**

Data Sources: GNP - http://research.stlouisfed.org/fred2/categories/106
S&P 500, EPS and DPS - http://pages.stern.nyu.edu/~adamodar/

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF SOUTHERN INDIANA GAS AND ELECTRIC COMPANY d/b/a VECTREN ENERGY DELIVERY OF INDIANA, INC. ("VECTREN SOUTH ELECTRIC") FOR (1) AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR ELECTRIC UTILITY SERVICE; (2) APPROVAL OF NEW SCHEDULES OF RATES AND CHARGES APPLICABLE THERETO; (3) INCLUSION IN ITS BASE RATES OF COSTS ASSOCIATED WITH CERTAIN PREVIOUSLY APPROVED QUALIFIED POLLUTION CONTROL PROPERTY PROJECTS; (4) AUTHORITY TO IMPLEMENT A RATE ADJUSTMENT MECHANISM TO TRACK INCREMENTAL CHANGES IN CERTAIN COSTS AND REVENUES RELATING TO ITS GENERATING FACILITIES; (5) AUTHORITY TO IMPLEMENT A RATE ADJUSTMENT MECHANISM TO TRACK INCREMENTAL CHANGES IN NON-FUEL RELATED MIDWEST INDEPENDENT TRANSMISSION SYSTEM OPERATOR, INC. ("MISO") CHARGES AND PETITIONER'S TRANSMISSION REVENUE REQUIREMENT; (6) APPROVAL AS AN ALTERNATIVE REGULATORY PLAN PURSUANT TO IND. CODE § 8-1-2.5-6 OF A RETURN ON EQUITY TEST TO BE USED IN LIEU OF THE STATUTORY NET OPERATING INCOME TEST IN ITS FUEL ADJUSTMENT CHARGE PROCEEDINGS; (7) APPROVAL OF REVISED DEPRECIATION ACCRUAL RATES; (8) APPROVAL OF THE CLASSIFICATION OF PETITIONER'S FACILITIES AS TRANSMISSION OR DISTRIBUTION IN ACCORDANCE WITH THE FEDERAL ENERGY REGULATORY COMMISSION'S SEVEN FACTOR TEST; AND (9) APPROVAL OF VARIOUS CHANGES TO ITS TARIFF FOR ELECTRIC SERVICE INCLUDING NEW INTERRUPTIBLE AND ECONOMIC DEVELOPMENT RIDERS.	)	CAUSE NO. 43111

PREFILED TESTIMONY OF
MICHAEL J. ILEO - PUBLIC'S EXHIBIT NO. 4

ON BEHALF OF
THE INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

February 27, 2007

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TESTIMONY OF MICHAEL J. ILEO
CAUSE NO. 43111
VECTREN - ELECTRIC RATE CASE

1.0 QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS.

A. My name is Michael J. Ileo. My present business address is James Center III, Suite 601, 1051 East Cary Street, Richmond, Virginia 23219.

Q. WHAT IS YOUR OCCUPATION?

A. I am President and Chief Economist of Technical Associates, Inc. ("TAI"), which is an independent business research and consulting firm with its main office in Richmond, Virginia and a satellite office in Wellington, Florida. Since its formation in 1969, TAI has provided a wide variety of economic, financial, and other technical consulting services to government and private clients throughout the United States and Canada. Many of these engagements have involved utility and insurance matters before state and federal regulatory bodies, as well as antitrust, franchise, patent infringement, and other business issues in civil litigation before state and federal courts.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL BACKGROUND AND EDUCATION.

A. Both before and since co-founding TAI in the late 1960's, I have practiced as an economic consultant to various business organizations and government agencies. As part of the utility regulatory work performed by TAI, I have presented expert testimony with respect to cost of service, depreciation, cost separations and allocations, rate design, cost of capital, revenue requirement, and related issues before most federal regulatory agencies. These include the Federal Energy Regulatory Commission, Federal Power Commission, Federal Communications Commission, Interstate Commerce Commission, Department of Energy, Nuclear Regulatory Commission, and the Federal Maritime Commission in the United States, as well as the National Energy Board in Canada.

Over these more than 35 years, I have also appeared as an expert witness on regulatory issues involving natural gas, telephone, water, and electric utilities before a number of state and provincial regulatory authorities. These include Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Hawaii, Illinois, Indiana, Kentucky, Maine, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nevada, New Jersey, New Mexico, New York, Ohio, Oregon, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Texas, Virginia, Washington, West Virginia and Wisconsin in the United States, as well as British Columbia, New Brunswick, Ontario, and The Yukon in Canada.

Q. **TO WHAT EXTENT HAS YOUR UTILITY REGULATORY EXPERIENCE INVOLVED DEPRECIATION MATTERS?**

A. During my professional career, I have conducted (with the assistance of others at TAI) depreciation studies of the plant and equipment of such utilities as Baltimore Gas & Electric, Bell Atlantic, Central Telephone, Cincinnati Bell, Citizens Utilities (electric, gas, and water), Great Lakes Pipeline, Indiana Bell, Iroquois Gas Transmission, Nevada

Bell, Northern Border Pipeline, Northwest Pipeline, Piedmont Natural Gas, Potomac Electric Power, Southwest Gas, Trans-Alaska Pipeline System, TransCanada Pipelines, United Water, US West, Washington Gas Light, Williams Pipeline, and various municipal water systems in Florida and Virginia.

The depreciation studies performed by TAI have typically involved the application of mortality and actuarial life techniques to historical patterns of investment installations and retirements by plant and equipment account. These techniques are commonly referred to in utility industries as Iowa Curve and Gompertz-Makeham analyses, whereby the proportion or percent surviving (PS) of vintage year installations is given as a continuous and specified function of age. My applications of Gompertz-Makeham analyses have normally pertained to telephone utilities (e.g., Bell Atlantic and US West), while I have employed Iowa Curve analyses for electric, gas, and water utilities.

Under both techniques, the ultimate objective is to determine an appropriate annual depreciation rate (DR) for each plant and equipment account utilizing the traditional remaining life (RL) approach as given by:

$$DR = (100\% - ADR\% - NS\%)/RL:$$

Where 100% represents plant in service (PIS), ADR% is accumulated depreciation reserve expressed as a percentage of PIS, and NS% is net salvage expected upon retirements and similarly expressed as a percentage of PIS. RL is determined by "best-fit" matching, utilizing statistical techniques, of Iowa or Gompertz-Makeham Curve properties to the actual vintage age retirement characteristics of plant accounts.

Depending on the nature of the utility, plant account, and/or availability of pertinent data, I have also conducted Unit of Production (e.g., with respect to the Trans-Alaska Pipeline System). Life-Span, and Simulated Plant Balance depreciation studies. These latter two methods have been utilized as necessary surrogates for actuarial life techniques when some (or all) of the continuing property records of a utility have not been compiled on a vintage year basis.

2.0 PURPOSE AND RECOMMENDATIONS

Q. PLEASE OUTLINE THE PURPOSE OF YOUR TESTIMONY.

A. TAI has been retained by the Indiana Office of Utility Consumer Counsel ("OUCC") to perform independent studies in evaluating the reasonableness of the depreciation proposals of Vectren South-Electric ("Vectren" or "Company") in this case, as set forth in its general rate case filing before the Indiana Utility Regulatory Commission ("Commission"). To a significant degree, these proposals are based on a Depreciation Accrual Rate Study ("Depreciation Study") conducted by Management Applications Consulting, Inc. ("MAC") utilizing historical plant and equipment account data provided by the Company through December 31, 2005.

The purpose of my testimony is to report the results of the studies performed by TAI under my direction and supervision with respect to Vectren's depreciation proposals. I will also offer a number of recommendations on behalf of the OUCC.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A. Based on our studies, I am recommending that the Commission approve only part of the Depreciation Rates (DRs) sought by Vectren in this case. In particular, I recommend that:

(1) for existing DRs, the Company's depreciation proposals be approved for each plant account where the Proposed DR is equal to or lower than the Current DR (see Exhibit MJI-2);

(2) for existing DRs, the Company's depreciation proposals be rejected for each plant account where the Proposed DR is greater than the Current DR, so as to leave the Current DR in place (See Exhibit MJI-2);

(3) where no Current DR exists, the Company's depreciation proposals be approved for each plant account (See Exhibit MJI-3);

(4) for the Culley Multi-Pollutant Systems (Fabric Filter), the Company's depreciation proposal of 6.28% be rejected and, instead set at 5.83% (pursuant to terms of a settlement agreement in Cause 42861); and

(5) the Company be ordered to undertake efforts aimed at making its continuing property records capable of creating a factual basis for its depreciation proposals.

3.0 TAI'S EVALUATION PROCESS

Q. HOW DID TAI PROCEED IN EVALUATING VECTREN'S DEPRECIATION REQUESTS?

A. The reasonableness of any proposed set of plant account depreciation prescriptions can be tested only upon evaluating the factual bases upon which they rest. TAI examined the procedures utilized in the MAC Depreciation Study, as well as underlying data provided by the Company. The plant installation, retirement, and net salvage data was analyzed by TAI for each of Vectren's accounts to determine whether (and the extent to which) a factual basis could be reasonably ascribed to the Company's specific depreciation proposals before the Commission.

Q. WHAT IS YOUR UNDERSTANDING OF THE COMPANY'S DEPRECIATION PROPOSALS IN THIS PROCEEDING?

A. Vectren requests numerous changes in presently authorized depreciation rates ("DRs"), both increases and decreases, as well as approval of new DRs applicable to plant accounts for which the Commission has not previously granted authorization in a general rate case context. Exhibit MJI-2 to my testimony, consisting of five pages, presents a comparison of presently authorized and Company proposed depreciation expenses and rates by Vectren plant account taken in relation to reported plant in service balances as of December 31, 2005.

As a tabulation in Exhibit MJI-2 through Total Retail Plant will indicate, the Company is proposing to modify presently authorized DRs for nearly all of some 50 plant accounts. The net impact of these proposed changes is a lowering of the composite DR from 3.54% to 2.95%. The corresponding reduction in aggregate depreciation expense is $7.712 million; i.e., from $45.940 million to $38.227 million based on plant in service at December 31, 2005.

On the other hand, and as shown in Exhibit MJI-3, the Company's proposed DRs for plant accounts with no currently authorized DRs add $14.917 million to the aggregate depreciation expense sought by Vectren in this proceeding. A summary of the composite data in Exhibits MJI-2 and 3 with respect to the Company's proposals for Total Retail Plant appears below with dollars in millions:

Account Type	Plant In Service At 12/31/05	Proposed Depreciation Expense	Proposed Composite DR
Existing DRs	$1,298.979	$38.227	2.95%
New DRs	$275.358	$14.917	5.42%
Total	$1,575.337	$53.144	3.37%

Q. HOW DO YOU VIEW THE COMPANY'S DEPRECIATION REQUESTS?

A. Considered in an aggregate context, the Company's depreciation proposals have a semblance of reasonableness in that the composite DR for its retail business would be lowered to 3.37% under its requests. As shown in Exhibit MJI-2, the corresponding presently authorized composite DR is 3.54%. A much different picture emerges, however, when the details of Vectren's depreciation proposals are examined.

Normally when conducting or evaluating depreciation studies, the significant matters that arise involve the selection of "best-fit" Iowa Curves, as well as the implications of historical net salvage experience upon retirements of plant. But in this case, fundamental and extensive issues are posed as to the accuracy and reliability of the Company's net salvage and other depreciation data, particularly with respect to its transmission, distribution, and general plant accounts. Issues also arise as to the factual basis for assumptions in the MAC Depreciation Study as to when Vectren's power plants will reach final retirement. Results of the studies conducted by TAI of available depreciation data lead me to conclude that the Company has largely failed to justify its specific depreciation proposals in this case. This finding excludes the DRs of 5.55% shown in Exhibit MJI-3 for the NOX Removal System investment of Vectren, as these DRs are presently governed by the terms of a 2003 Settlement Agreement.

Q. PLEASE OUTLINE THE NATURE OF THE DEPRECIATION DATA PROBLEM.

A. With respect to the Company's net salvage data utilized in the MAC Depreciation Study, numerous incongruities are found for the years 2001-2005 between reported net salvage values and reported plant and equipment retirements. For example, positive and negative net salvage amounts are shown for plant accounts during years when no corresponding retirements are reported for these accounts and years. Whether these inconsistencies stem from problems with Vectren's financial records or from procedures employed by MAC remains to be seen.

Regarding the Company's transmission, distribution, and general plant accounts, for which vintage age (i.e., actuarial) retirement data largely do not exist, the state of available data is so poor that literally any DR finding is conceivable. This outcome is reflected in the MAC Depreciation Study by the adoption of Iowa Curves, selected through simulation methods that bear little resemblance to actual retirement patterns.

Actuarial data are available for Vectren's power plant accounts from which applicable Iowa Curves can be derived. However, while selected Iowa Curves are not identified in the MAC Depreciation Study for these accounts, a truncation process appears to have been applied therein based on unsupported premises regarding when the Company's power plants will be deactivated.

Q. WHAT RECOMMENDATIONS DO YOU MAKE FOR THE COMMISSION'S CONSIDERATION?

A. Because of the depreciation data and procedures problem described above, I recommend that the Commission:

1) approve the Company's Proposed DR for each existing plant account where the proposal is equal to or lower than the Current DR;

2) reject the Company's Proposed DR for each existing plant account where the proposal is greater than the Current DR (leaving existing rates unchanged);

3) approve the Company's Proposed DR for each plant account where no Current DR exists, except with respect to Vectren's Multi-Pollutant Systems investment of some $49.0 million made at its Culley generating station that is not addressed in the MAC Depreciation Study.

Regarding the Multi-Pollutant Systems in recommendation 3 immeditately above, the Company proposes a DR of 6.28%, for which no basis exists at least with respect to any analysis performed by MAC. Pursuant to the terms of a settlement in Cause No. 42861, I understand that depreciation prescriptions for this investment have been set at a life of 18 years with a -5% net salvage. These prescriptions equate to a DR of 5.83%; i.e., [(100% - 0% - (-5%))] / 18, which I recommend for Vectren's Multi-Pollutant Systems.

Without a credible set of net salvage and retirement data, neither the Company's presently authorized nor its proposed DRs can be tested for appropriateness. Therefore, the Commission should also order the Company to undertake efforts aimed at making its continuing property records capable of creating a factual basis for its depreciation proposals. I note in this regard that such an undertaking may simply involve a compilation and analysis of engineering job or work orders on a representative random sample basis for several recent years. The execution of these engineering orders is a standard operating practice within all types of public utilities in my experience, as well as required by the rules and regulations governing the FERC's Uniform System of Accounts as utilized by the Company.

Q. HOW DO YOUR RECOMMENDATIONS MODIFY THE FINDINGS OF THE MAC DEPRECIATION STUDY?

A. Referring to Exhibit MJI-2, the implementation of my recommendations will mean that the DRs in Column (5) remain in effect if they are less than those in Column (6). On the other hand, the DRs in Column (6) will become applicable if they are less than those in Column (5). With respect to the DRs in Column (6) of Exhibit MJI-3, they all would become applicable under my recommendations.

Relative to plant in service reported by Vectren as of December 31, 2005, approval of my DR recommendations will lower aggregate depreciation expense applicable to Total Retail Plant ($1,575.337 million at year-end 2005) in the MAC Depreciation Study from the $53.144 million proposed therein to $51.113 million -- a reduction of $2.031 million as itemized on the following page:

Account	Amount ($000)
312.2 (Brown)	$8.8
312.4 (Brown)	187.7
312.6 (Brown)	24.3
312.1 (Culley)	174.8
314.0 (Culley)	601.6
358.0	4.9
361.0	0.1
364.0	125.4
365.0	519.2
391.1	52.2
392.1	36.1
392.3	295.9
TOTAL	$2,031.0

The above amounts represent a reversal of the depreciation expense increases proposed by MAC as shown in Column (7) of Exhibit MJI-2. At an aggregate depreciation expense of $51.113 million, the Composite DR becomes 3.24% (i.e., $51.113/$1,575.337) as compared to the 3.37% set forth in the MAC Depreciation Study.

Q. DOES YOUR ANSWER TO THE PREVIOUS QUESTION MEAN YOU ARE ACCEPTING THE NEW DRS PROPOSED BY THE COMPANY?

A. Yes. For purposes solely of this case and with the exception previously noted regarding Multi-Pollutant Equipment, I am recommending that the Commission approve each of the New DRs proposed by Vectren as shown in Exhibit MJI-3. For plant accounts therein other than those involving NOxX Removal Systems (i.e., Nos. 312.4), I do not regard the proposed New DRs as wholly unreasonable in light of my experience, even though many attendant questions are posed due to the poor quality of the Company's depreciation data. Adoption of the New DRs for NOxX Removal Systems serves to reaffirm, at this comparatively early stage, the provisions of a 2003 Settlement Agreement pertaining to this investment.

However, with respect to both sets of plant accounts in Exhibit MJI-3, as well as with those in Exhibit MJI-2, the appropriateness of DRs should be revisited once Vectren has undertaken a plan to improve its continuing property records. These efforts should take no more three years to complete, such that the Company also should be then required to submit a new depreciation study by plant account -- and surely within no more than five years.

Q. DO YOUR RECOMMENDATIONS APPLY TO PLANT ACCOUNTS IMPACTED BY THE RETIREMENT OF UNIT NO. 1 AT THE COMPANY'S CULLEY GENERATING STATION?

A. Yes. As background in this regard, the following DR data relate to plant accounts impacted by the Culley Unit No. 1 retirement:

	Depreciation Rates (DRs)		
Acct. No.	Current a/	MAC Proposed a/	Vectren Proposed b/
312.1	3.36%*	3.51%	3.70%
314.0	3.00%*	4.08%	4.78%
315.0	3.57%	0.85%*	0.67%

a/ Exhibit MJI-2.
b/ Exhibit No. MSH-3.

The asterisks (*) above indicate my DR recommendations in this proceeding for the identified plant accounts. Until a factual and methodologically-sound basis is demonstrated by Vectren for its depreciation proposals, I take the position that the Commission should constrain the Company's depreciation requests

4.0 NEED FOR CONTINUING PROPERTY RECORD IMPROVEMENTS

Q. HOW MIGHT THE COMPANY PROCEED IN DEVELOPING A FACTUAL BASIS FOR ITS DEPRECIATION PROPOSALS?

A. Under ideal circumstances, the continuing property records for each of Vectren's plant accounts should contain readily accessible vintage age (i.e., actuarial) data. Such conditions appear to be totally applicable to the Company's power plant accounts, given the contents of the MAC Depreciation Study and attendant responses to discovery. Much to the contrary is true for Vectren's transmission, distribution, and general plant accounts, although some (highly limited) actuarial data are found in the Company's discovery responses for certain general plant accounts.

Presumably, available vintage age data for the Company's power plant accounts have been compiled from underlying engineering work orders that specify the physical and financial parameters of construction, installation, change-out, retirement, and other projects. I further presume, consistent with standardized utility practices, that engineering work orders are also executed within Vectren when it proceeds to construct distribution lines, replace transformers, install service drops, repair overhead conductors, *ad infinitum.* Without an engineering work order or similar tracking system, a utility would be unable to monitor and control its investment expenditures. Audits with respect to these expenditures also often involve an examination of engineering work and purchase orders. As suggested here, the Company's efforts to develop a factual basis for its depreciation proposals should focus on compiling data from job orders executed in its engineering and procurement departments with respect to plant investment projects.

Q. **TO WHAT EXTENT SHOULD VECTREN UNDERTAKE THE COMPILATION PROCESS?**

A. Since benefit/cost trade-offs prevail in all business actions, I would not object if the Company decided to rectify the "factual" deficiency on a representative random sample basis. By simple hypothetical illustration, suppose Vectren executes 1,000 engineering job orders annually. A 5% random sample for each of the most recent three years, which would be selected as every 20th work order (e.g., 1, 21, 41, 61 and so forth) during each year, would produce a total of 150 work orders from which relevant vintage age characteristics could be extracted by plant account.

My experience with the engineering job order systems of other utilities indicates that these documents contain a wealth of information, such as the replacement of specific facilities, the installation cost and age of original facilities, the cost of new facilities, the cost of removing old facilities, and any attendant salvage value. All of this data, compiled on a random sample basis, would serve to create a credible basis for the Company's future depreciation proposals.

In the alternative, and given this new electronic era, Vectren may decide that representative random samples are unnecessary; i.e., data from all engineering job orders can be routinely compiled as the cost differential is not material. Surely, with such an extensive compilation, the factual bases of the Company's depreciation proposals in the future would be more sustainable.

Q. **DOES THE CREATION OF SUCH A DATABASE MEAN THAT NO CONTROVERSY WOULD EXIST AS TO APPROPRIATE DEPRECIATION PRESCRIPTIONS?**

A. No. Issues will always arise as to appropriate RLs, net salvage values, and DRs, even if complete actuarial records by plant account are available. This follows because DR determinations necessarily involve statistical processes, as exemplified by the application of "best-fit" Iowa Curves. But at the same time, the decision-making process is subject to far fewer assumptions, premises, and other caveats.

For example, should Vectren opt for a representative random sample approach to the compilation of engineering job order data, at least some accurately reported actual experience will be available as to how long plants last, what it costs to remove plant in relation to its original cost, and other significant depreciation matters. Under present circumstances, in contrast, essentially none of this historical information is available on a vintage age basis for the Company's transmission, distribution, and general plant accounts. This void, in turn, required the use of simulation methods in the MAC Depreciation Study, which are subject to considerable criticism – both in theory and as applied in the instant case. The compilation of at least some actuarial data may not totally eliminate the need for simulation techniques, but the results of these methods can be tested for reasonableness once such a database is available.

5.0 SPECIFIC ILLUSTRATIONS OF DATA AND OTHER DEFICIENCIES

Q. IN THE INDEPENDENT STUDIES PERFORMED BY TAI, WERE ALL OF VECTREN'S PLANT ACCOUNTS EXAMINED?

A. Yes, to varying degrees. Examinations proceeded using two types of analyses; i.e., one pertaining to the Company's power plant accounts for which actuarial data are available, and one involving Vectren's transmission, distribution, and general plant accounts for which actuarial data are typically unavailable. As noted earlier, data problems pervade reported net salvage values for both sets of accounts, which greatly inhibits the ability to draw any meaningful conclusions as to appropriate DRs.

The same is true with respect to retirement data for the Company's transmission, distribution, and general plant accounts. On the other hand, while retirement data for Vectren's power plant accounts appear accurate and reliable, the MAC Depreciation Study superimposes premises on these data for which a factual basis does not exist.

5.1 <u>Net Salvage Data</u>

Q. WHAT DIFFICULTIES ARE ENCOUNTERED IN EXAMINING THE COMPANY'S NET SALVAGE DATA?

A. As the traditional DR formula of DR=(100%-ADR%-NS%)/RL suggests, the net salvage (NS%) issue is an important consideration in the determination of appropriate DRs. This matter is greatly clouded in the instant case by the numerous incongruities exhibited in Vectren's net salvage records. To illustrate, upon examining the net salvage databases presumably provided to MAC by the Company covering the years 2001-2005, one finds the following for its Culley generating plant:

(1) a net salvage value of -$132,079 is shown for Account No. 314.0 in 2001, when no corresponding retirement is reported for this Account in that year;

(2) the same is true for Account No. 312.1 in 2004; i.e., a net salvage value of -$74,568 when no corresponding retirement is shown; and,

(3) while amounts differ, the same is again true for Account No. 311.0 in 2002 and Account No. 315.0 in 2005.

Q. DO THE EXAMPLES CITED IN YOUR PREVIOUS ANSWER FULLY CAPTURE THE NATURE OF THE PROBLEMS WITH THE COMPANY'S NET SALVAGE DATA?

A. No. The problems extend well-beyond plant accounts for Culley. With respect to the Warrick generating plant, for instance, net salvage values are shown within Account No. 312.1 on four occasions over the years 2001-2005 with no corresponding retirements. One of these even involves a positive net salvage value. For all three of Vectren's generating plants, moreover, what appear as anomalous relationships are displayed (e.g., extraordinarily high and low net salvage values --- both negative and positive) when viewed in relation to the corresponding retirement amounts reported.

Similar difficulties are encountered upon examining net salvage data for many of the Company's transmission, distribution, and general plant accounts. Questions are also posed as to whether MAC has misapplied Vectren's net salvage data. Again by example, one data file underlying the MAC Depreciation Study applicable to Transmission Account No. 353 (Station Equipment) shows a -$5 net salvage value for retirements during 2005, while another data file lists the net salvage amount at -$55,978 for 2005. Indeed, several other anomalies are exhibited for this Account over the years 2001-2005, as well as for many other accounts. While the list of net salvage data difficulties is not endless, it surely would require an extensive investigation to rectify.

Q. IS IT POSSIBLE TO RECONCILE OR RESOLVE THE NET SALVAGE DATA PROBLEM?

A. Perhaps, but such an effort would require a considerable undertaking given the present poor state of available data. Vectren bears the responsibility, at the outset, of demonstrating the appropriateness of its depreciation proposals. My view is that this is achievable only upon improvements in the Company's continuing property records, whether accomplished in a comprehensive or representative random sample manner.

5.2 <u>Non-Power Plant Accounts</u>

Q. HOW DID TAI PROCEED IN ANALYZING VECTREN'S TRANSMISSION, DISTRIBUTION, AND GENERAL ACCOUNTS?

A. At literally every turn upon first examining each of the non-power plant accounts of the Company, numerous questions arose as to the credibility of the corresponding data and procedures in the MAC Depreciation Study. As with the net salvage data problem, I deliberated as to whether an effort should be pursued (such as through additional detailed discovery and analyses) to reconcile and/or resolve the many difficulties encountered given the available time and resources. I concluded that such a project could not be completed on behalf of the OUCC within the context of this proceeding, particularly given that this is a responsibility of Vectren in the first instance.

To demonstrate, the extent of the data and procedures problem applicable to the Company's non-power plant accounts, Exhibit MJI-4 to my testimony (consisting of four pages) presents information utilized in the MAC Depreciation Study for three comparatively large investment categories: Transmission Account No. 353.0 (Station Equipment) and Distribution Account Nos. 365.0 (Overhead Conductors & Devices) and

369.0 (Services). The data displayed in Exhibit MJI-4, which were provided by Vectren and MAC in response to OUCC information requests, demonstrate that: (1) repeated inconsistencies are found in the MAC Depreciation Study between the selected Iowa Curve specified therein for a plant account and the reported vintage year surviving plant balances for that account as of December 31, 2005; and, (2) the Simulated Plant Record Balance ("SPRB") method utilized in the MAC Depreciation Study is incapable of identifying appropriate Iowa Curves and, hence, establishing reasonable DRs given the state of Vectren's plant account data.

Q. PLEASE EXPLAIN PAGE 1 OF EXHIBIT MJI-4.

A. Page 1 relates to Transmission Account No. 353.0 (Station Equipment) covering Vintage Years 1976 through 2005 as listed in Column (1). Note at the outset that none of the Totals on Page 1 for Account No. 353.0 equate to the plant balance of $71.122 million reported on Page 3 of Exhibit MJI-2. These differentials occur, apparently, because no vintage year installation data were provided to MAC by the Company for years prior to 1976, for which a balance at year-end 1975 of some $13.618 million then existed. Since the treatment of this balance in the MAC Depreciation Study remains unknown, Page 1 and other pages of Exhibit MJI-4 focus only on the years for which individual year data have been provided.

Column (2) of Page 1 lists the age of plant as of year-end 2005, based on a mid-year counting convention, while Column (3) shows the corresponding vintage year total for Account No. 353.0 plant installations reported by Vectren for each of the years 1976-2005. Total Installations in Column (3) represent the additions shown in the data provided by Vectren and MAC, as well as positive and negative adjustments listed therein by vintage year.

Column (4) shows what is reported in the MAC Depreciation Study as the vintage year surviving plant balances for Account No. 353.0 upon applying Iowa Curve R1.0-42, where the designation 42 means an average service life of 42 years. However, when the properties of Iowa Curve R1.0-42; i.e., those in Column (5), are applied to the vintage years installations in Column (3), the resulting surviving plant balances differ materially from those shown in Column (4) as taken from the data underlying the MAC Depreciation Study. For instance, whereas Column (6) shows a surviving balance for Vintage Year 1982 plant at Age 23.5 of $2.021 million upon applying Iowa Curve R1.0-42, the MAC Depreciation Study reports a corresponding plant balance of $6.198 million.

Not only is this and many other figures in Column (4) inconsistent with Iowa Curve R1.0-42, but they are impossible given the Total Installations in Column (3). Again referring to Vintage Year 1982, $6.198 million in surviving plant at December 31, 2005 is an impossibility given that only $2.088 million was installed in that year. Similar anomalies appear on Page 1 of Exhibit MJI-4 in comparing Columns (3) and (4) for Vintage Years 1980, 1981, 1987, 1994, and 1996. Extreme circumstances of a converse nature also prevail; e.g., for Vintage Year 1997 where installations total $6.624 million in contrast to the MAC Depreciation Study report that only $0.666 million was surviving at December 31, 2005. This, again, is an impossible outcome, as Iowa Curve R1.0-42 specifies that the percent surviving of plant with an Age of 8.5 years is 94.07% -- not 10.05% (i.e., $0.666/$6.624).

Q. ARE SIMILAR ANOMALIES AND IMPOSSIBILITIES PORTRAYED ON PAGES 2 AND 3 OF EXHIBIT MJI-4?

A. Yes. Compare the amounts in Columns (3) and (4) on Page 2 for Account No. 365.0 (Overhead Conductors & Devices). It is impossible for the annual data in Column (4) to be greater than the corresponding annual data in Column (3). Further incongruous is an equality between the amounts in Columns (3) and (4), given that Iowa Curve R1.0-33 is specified in the MAC Depreciation Study as being applicable to Account No. 365.0. The correct surviving plant balances for this Account are depicted in Column (6) on Page 2 upon an application of Iowa Curve R1.0-33 to vintage age plant installations. Page 3 of Exhibit MJI-4 displays the same puzzling patterns for Vectren's Account No. 369.0 (Services) within the data underlying the MAC Depreciation Study.

Q. ARE ACCOUNT BALANCES APPLICABLE TO YEARS BEFORE 1976 CONSIDERED ON PAGES 2 AND 3 OF EXHIBIT MJI-4?

A. No. Documents provided by the Company and MAC list these balances at \$11.207 million for Account No. 365.0 and \$2.559 million for Account No. 369.0. However, in that the treatment of these surviving plant installations at year-end 1995 has not been disclosed, I have excluded them from the presentations on Pages 2 and 3. But even if the \$11.207 million and \$2.559 million were somehow taken into consideration, they still could not explain the dichotomies among the data within Columns (3), (4), and (6) of Exhibit MJI-4.

5.3 <u>Power Plant Accounts</u>

Q. DID TAI EXAMINE THE DATA AND PROCEDURES APPLIED IN THE MAC DEPRECIATION STUDY FOR EACH OF VECTREN'S POWER PLANT ACCOUNTS?

A. Yes, at least on an initial basis. Aside from the net salvage issue discussed earlier in my testimony, no significant data problems were encountered with respect to the Company's power plant accounts. Early on in the investigation, however, it became clear that a central issue pertained to each of these accounts. In particular, while statistical techniques were presumably applied to vintage age installation and retirement data in the MAC Depreciation Study to derive "best-fit" Iowa Curves, truncation procedures were also applied to each power plant account. These techniques, which essentially remove significant portions of "best-fit" Iowa Curves pursuant to an assumed year of final retirement, serve to shorten remaining lives ("RLs") and raise DRs.

Q. IS THE APPLICATION OF A TRUNCATION PROCEDURE INAPPROPRIATE?

A. No, at least not in concept. However, a definitive factual basis should exist for the point in time at which deactivation is specified to occur; i.e., the year of truncation. This is not true in the instant case. I find no mention, for example, in Vectren's most recent integrated resources plan that any of its generating stations (Brown, Culley, and Warrick) will be retired within the next 20, 30, or even 40 years. Nevertheless, the MAC Depreciation Study assumes that these power plants will be fully retired in 2018 (Culley) 2031 (Brown), and 2017 (Warrick); i.e., the years at which Iowa Curve truncation takes place. Absent a factual/definitive basis, presumed deactivation dates inappropriately provide premature investment cost recovery.

By hypothetical illustration, suppose an investment of $1,000 made today is specified as recoverable on a straight-line basis over 10-years. Suppose further that, at the end of Year 3, a presumption is interjected that deactivation will occur at the end of Year 8. Annual recovery had been at a DR of 10% ($100) annually, but now it must be raised to 14% ($140) as RL has been lowered from 7 to 5 years; i.e., $140 = ($1,000-$300)/5. If a factual basis has been established for the retirement in Year 8, the indicated DR increase would be appropriate.

On the other hand, suppose the retirement did not actually occur until Year 10. This will have meant that, while plant has remained "used and useful" in providing services for 10 years, attendant investment costs have been fully recovered in only 8 years. In that competitive markets typically will not permit such premature investment recovery patterns, nor should the depreciation prescriptions approved by regulatory agencies.

Q. USING THE POWER PLANTS OF THE COMPANY, WILL YOU PROVIDE AN EXAMPLE OF THE TRUNCATION PROCESS?

A. Consider plant Account No. 312.1 (Boiler Plant Equipment) for the Culley generating station of Vectren. As with other power plant accounts of the Company, the MAC Depreciation Study does not identify the specific Iowa Curve applied to Culley Account No. 312.1. Rather, the only pertinent reference in this regard is to a "FORECAST." Given that actuarial data exist for this and other power plant accounts, TAI proceeded to interpret the meaning of FORECAST within the context of the presumed plant deactivation year (2018) for Culley in the MAC Depreciation Study. The results of this investigation are shown in Exhibit MJI-5, consisting of four pages.

Q. PLEASE EXPLAIN PAGE 1 OF EXHIBIT MJI-5.

A. Page 1 of Exhibit MJI-5, computes the proportion surviving ("PS") of vintage age Culley Account No. 312.1 investment as of year-end 2005 by vintage year of installation. As an aid in understanding these PS calculations, consider the following simple hypothetical plant installation pattern:

	Vintage	Plant Installations	
Year	Age @12/31/05	In Year	Cumulative
2001	4.5	$100	$100
2002	3.5	$110	$210
2003	2.5	$120	$330
2004	1.5	$130	$460
2005	0.5	$140	$600

Suppose also that corresponding actuarial retirement data exhibit the following characteristics:

	Retirements Attributable To Vintage Age Installations					
Year	4.5	3.5	2.5	1.5	0.5	Total
2001	$0	$0	$0	$0	$0	$0
2002	10	0	0	0	0	10
2003	10	11	0	0	0	21
2004	10	11	12	0	0	33
2005	10	11	12	13	0	46
Total	$40	$33	$24	$13	$0	$110

From the above two sets of data, the plant balance at year-end 2005 is $490; i.e., cumulative total installations of $600 less cumulative total retirements of $110. These data also permit the construction of relationships between cumulative installations and retirements by investment age:

(1) Investment Age	(2) Cumulative Installations	(3) Cumulative Retirements	(4) PS Value [100%-(3)/(2)]
0.5	$600	$0	100.00%
1.5	$460	$13	97.17%
2.5	$330	$24	92.73%
3.5	$210	$33	84.29%
4.5	$100	$40	60.00%

Through a statistical matching of the above PS values in Column (4) to similar values for various types of Iowa Curves, a determination can be made as to what Iowa Curve and average service life properties "best" describe the installation and retirement characteristics of the hypothetical investment account.

With this background in mind, Column (1) on Page 1 of Exhibit MJI-5 identifies the number of cumulative actuarial data observations available for analyzing Vectren's investment in Culley Account No. 312.1. To illustrate, 50 observations are available regarding all plant installations that reached an Age of 0.5 years as shown in Column (2), dating from 1955 through 2005. In contrast, only one actuarial data observation is available for plant installations that have reached an Age of 49.5 years; i.e., installations made by the Company in 1955.

Column (3) on Page 1 reports the cumulative amounts of these vintage plant installations from 1955 (Age 49.5) through 2005 (Age 0.5), while Column (4) shows the corresponding cumulative plant retirements by vintage age. Column (5) of Page 1 calculates the resulting PS values by Age of Culley Account No. 312.1 investment.

For example, no retirements are reported in the Company's actuarial data for plant installations that achieved an Age of 8.5 years, such that applicable PS values for Ages 0.5 through 8.5 years are all 100%. Retirements become applicable at Age 9.5 in the cumulative amount of $150,958, which when related to the cumulative installations of $93,273,048 that have reached an Age of 9.5 years, the resulting PS is 99.838155%; i.e., [100%-($150,958/$93,273,048)] = 99.838155%. The PS values in Column (5) of Page 1 form the statistical data used to determine "best-fit" Iowa Curves.

Q. HOW WAS THE "BEST-FIT" DETERMINATION PERFORMED?

A. Page 2 of Exhibit MJI-5 presents the outcome of the "best-fit" determination process. As reflected therein, PS values for 32 types of Iowa Curves and attendant service lives were matched to the data in Column (5) on Page 1 of Exhibit MJI-5.

For each type of Iowa Curve within the families of L, O, R, and S, such as designated for the latter in 0.5 intervals as S0.5 through S5, the service life was found that "best-fit" actual PS values for Culley Account No. 312.1 in terms of minimizing mean square error ("MSE"), which represents the average of the squared differentials among the 50 observations between actual PS values and Iowa Curve PS values. For example, with respect to Iowa Curve S0.5, the attendant service life that minimizes MSE among all possible service lives for Iowa Curve S0.5 is 86.6233 years.

Q. WHAT IS THE MEANING OF SERVICE LIFE?

A. Service Life is truly average service life ("ASL"); i.e., the central surviving tendency among vintages of plant that may range in lifespans from as little as 1 year to more than 100 years. Due to the mathematical properties of Iowa Curves, moreover, the area under Iowa Curve S0.5-86.6233 equates precisely to an average ASL of 86.6233 years.

Q. PLEASE EXPLAIN THE RANKINGS ON PAGE 2 OF EXHIBIT MJI-5.

A. The rankings enumerated in Column (1) as 1 through 32 reflect the MSE values in Column (4), from lowest to highest. As indicated therein, the best-fitting among all of the numerous Iowa Curves tested using the statistical process described is Iowa Curve S2 with an ASL of 65.535 years for Culley Account No. 312.1. Note that due to the comparatively narrow band of MSE values, Iowa Curves with Ranks of 1 through 8 on Page 2 also likely qualify as best-fitting.

Q. HOW DID TAI NEXT PROCEED WITH RESPECT TO VECTREN'S CULLEY ACCOUNT NO. 312.1?

A. The remaining life ("RL") implications of the Iowa Curve findings on Page 2 of Exhibit MJI-5 were next derived, both with and without truncation using Iowa Curve S2-66. The first step of this process is displayed on Page 3, wherein a dollar weighted average age of surviving Culley Account No. 312.1 investment at year-end 2005 is calculated to be 19.97 years. This weighted average age is carried to Page 4 of Exhibit MJI-5, wherein RLs are determined with no truncation and with truncation in various hypothesized years; i.e., in 2018 as presumed in the MAC Depreciation Study and at 5-year additional increments of truncation in 2023, 2028, 2033, 2038 and 2043. A summary of the RL findings on Page 4 of Exhibit MJI-5 for Culley Account No. 312.1 appears below:

Scenario	Remaining Life (RL) In Years
No Truncation	46.40
2018 Truncation	11.08
2023 Truncation	14.75
2028 Truncation	18.08
2033 Truncation	21.08
2038 Truncation	23.79
2043 Truncation	26.23

The 11.08 RL above compares to the 11.6 RL proposed in the MAC Depreciation Study, which suggests that a somewhat different Iowa Curve and attendant ASL was utilized by MAC than S2-66 for Culley Account No. 312.1. Recall in this regard that only a FORECAST is referenced in the MAC Depreciation Study. Whatever Iowa Curve may have been used by MAC, however, the above RL findings demonstrate the profound impact that truncation has on DRs.

To illustrate, given these RL results and accepting the applicable ADR% (67.7%) and NS% (-8.5%) in the MAC Depreciation Study, the resulting DRs from truncation at 2018 as contrasted with 2028 are, respectively, shown below:

$$DR = [100\%-67.7\%-(-8.5\%)]/11.08 = 3.68\ \%$$

$$DR = [100\%-67.7\%-(-8.5\%)]/18.08 = 2.26\%$$

Without a factual basis for truncation, including the specific year in which it is demonstrated to occur, truncation should not be incorporated in the DRs permitted by regulatory agencies. No showing has been made in this regard by either MAC or the

Company for its Culley generating plant. I note further that, with the addition of some $49 million in Multi-Pollutant Systems, this suggests a longer rather than shorter life for Culley.

6.0 CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. Vectren has not justified many of its depreciation proposals in this case. Numerous issues regarding the credibility of the data and procedures underlying the Company's proposed plant account DRs are posed. Only through a concerted effort by Vectren to improve its continuing property records can these problems be rectified.

I recommend, therefore, that the Commission approve only part of the plant account DRs requested by the Company in this proceeding, as specified earlier in my testimony. I further recommend that the Commission instruct Vectren to institute a plan by which its continuing property records and related documents are capable of creating a factual basis for its depreciation requests. Compliance with this requirement should be completed within three years, and surely no more than five years.

Q. HAVE YOU COMPLETED YOUR DIRECT TESTIMONY?

A. Yes.

Exhibit MJI-1

BACKGROUND AND EXPERIENCE PROFILE

DR. MICHAEL J. ILEO

PRESIDENT/CHIEF ECONOMIST
TECHNICAL ASSOCIATES, INC.

EDUCATION

1969-1972	Ph.D., Economics, Virginia Polytechnic Institute & State University
1967-1969	Graduate Economics, University of Missouri
1965-1967	M.S., Economics, University of Rhode Island
1963-1965	B.S., Economics, University of Rhode Island
1961-1963	A.S., Accounting, Roger Williams College

POSITIONS

1995-Present	President/Chief Economist, Technical Associates, Inc.
1993-1995	President/Chief Economist, C. W. Amos of Virginia
1972-1993	President/Senior Economist, Technical Associates, Inc., Adjunct Professor of Economics, Virginia Commonwealth University
1971-1972	Vice President and Senior Economist, Technical Associates, Inc.
1969-1971	Staff Economist, Technical Associates, Inc. Economics Instructor, Department of Economics, Virginia Polytechnic Institute & State University
1968-1969	Research Associate, Department of Electrical Engineering, University of Missouri
1967-1968	Economics Instructor, Department of Economics, University of Missouri
1965-1967	Consulting Economist, National Economic Research Associates, Inc.

EXPERIENCE

Utility Economics -- Appeared before numerous municipal, state, provincial, and federal bodies in the United States and Canada concerning various regulatory issues in the electric, gas, telephone and water utility industries. Expert testimony addressed such issues as rate levels and structures, depreciation, cost allocations and separations, rate of return, capital structure and costs, revenue requirement, demand forecasting, capacity planning, site location, business integration, avoidable costs, marginal cost pricing, accounting treatments, computer modeling, affiliate transactions, and corporate cost allocations. Conducted jurisdictional, interclass, and intraclass cost of service studies using embedded, marginal, and incremental cost methodologies such as TSLRIC and TELRIC. Presented computer based sensitivity analyses of alternative cost allocation and separation procedures employing different measures of utilization such as time and volume of use. Prepared alternative rate designs based on cost, elasticity, and other factors. Developed computer based transmission and distribution system routing models. Prepared numerous rate of return studies incorporating cost of equity determinations based on DCF, CAPM, comparable earnings, and other financial models. Developed procedures for identifying differential risk characteristics by customer class, type of service, and business division.

Anti-Trust Economics -- Performed analyses of relevant product and geographic markets related to such lines of business as retail automobile sales, natural gas sales and transportation, heating appliance repair and maintenance, radiological services, and financial institution deposits and loans. Conducted demand and supply elasticity studies to define relevant markets, as well as tests which account for product and consumer characteristics. Testified as to the existence and magnitude of predatory pricing using short-run and long-run costing standards. Calculated damages resulting from such anti-competitive practices as tying arrangements, discriminatory supply restrictions, dumping, and predation.

Health Care Economics -- Conducted econometric studies of hospital cost functions using data in Medicare Cost Reports. Testified in Certificate of Need proceedings regarding medical facility expansions. Served as a book reviewer for the Journal of Risk and Insurance on health care and other insurance matters. Conducted surveys of the health insurability characteristics of "high risk" consumers. Performed a management audit of BC/BS of Virginia regarding the relationship between diversification and insurer solvency. Wrote Master Thesis on the role of organized medicine in the pricing and delivery of health care services.

Insurance Economics -- Testified before insurance regulatory authorities in Maine, Massachusetts, Oregon, New Jersey, Rhode Island, South Carolina, and Virginia regarding the appropriate profit & contingency factor to be incorporated in rates for workers' compensation, medical malpractice, and other lines of insurance. Performed internal rate of return analyses of line of business insurance transactions using temporal cash flow modeling of premium collection and loss and expense payout patterns. Conducted studies as to the competitiveness of various property and casualty insurance markets using structure, behavior, and performance criteria. Ph.D. Thesis consisted of a statistical application of a mathematical model of insurance company pricing under different degrees of investment portfolio and insurance exposure risks.

Energy Economics -- Prepared studies on the relationship between utility pricing practices and the demand and supply of oil for residential heating purposes. Analyzed the relative energy efficiencies of rail versus truck transportation. Conducted studies of the structure and performance of the petrochemical industry. Testified on the long-run costs of coal versus nuclear use for electricity generation. Performed analyses of the fuel use decision in generation plant planning.

Transportation Economics -- Conducted cost of service studies of railroads, oil pipelines, water carriers, motor carriers and taxicabs. Testified before the ICC in numerous proceedings on the cost of transporting coal by rail with specific consideration of such issues as constant cost allocation, differential pricing and inverse elasticity, long-run marginal costs, Ramsey pricing, and stand-alone costing. Served as a consultant to the ICC's Rail Services Planning Office on the reorganization of rail service in the U.S. Testified before the FMC on the cost of capital to water carriers. Served as consultant to a number of shippers and the State of Alaska on the economics of oil pipelines. Testified on many occasions on the cost of service of moving crude and oil products by pipeline before the ICC, FERC, and the Alaska Pipeline Commission. Presented papers to various forums on the theory of cost allocation in transportation systems.

Financial Economics -- Prepared studies of the sustainability of LBOs, particularly with respect to the ability to meet debt service obligations set forth in due diligence reports. Critically examined the financial performance of firms that sought bankruptcy protection due to an inability to meet LBO forecasts, as well as environmental trust fund requirements. Analyzed benefit/cost ratios for businesses involved in mergers or acquisitions. Conducted economic feasibility studies of market and service expansion by financial institutions. Advised state regulators on the appropriateness of interest rate structures and loan maturities. Testified regarding industry financial standards in bankruptcy proceedings and valuation methodologies for state severance tax purposes.

Damage & Valuation Economics -- Appeared before federal and state courts regarding the economic loss sustained through personal and business injury due to bodily harm, non-performance, and anti-competitive practices. Testimony presented on behalf of private individuals, as well as business firms such as automobile dealers, equipment manufacturers, creditor committees, insurance companies, and heating contractors. Established the economic value of various businesses at given points in time, as well as in anticipation of future events. Evaluations have involved the application of times earnings, historical profit trends, equivalent business exchanges, discounted cash flow, and other market tests.

SELECTED REPORTS, ARTICLES, AND TESTIMONY

AForward-Looking Economic Revenue And Cost Studies Of Advanced Network Communications Services,@ prepared for the City of Bristol, Virginia, August, 2003 (with D. Parcell & K. Strobl).

Expert Reports and Testimony On Depreciation Rates For TransCanada Pipeline Ltd., prepared for the Canadian Association of Petroleum Producers, presented before the National Energy Board, 2001-2003.

AAn Economic And Actuarial Analysis Of Financial Incentives In Oregon=s Workers= Compensation Insurance Market,@ prepared for the Oregon Legislature (April, 2001) in conjunction with William M. Mercer, Inc.

Expert Testimony On The Inmate Telephone System In Virginia, prepared for Special Consumer Counsel to the Governor, November, 2000.

ACompetitive Impact Implications Of The Fleet/BankBoston Merger On Middle Market Lending In New England,@ prepared for the Connecticut Attorney General, April, 1999.

ADetermination OF Economic Damages Caused By Power Plant Failure,@ prepared for Doswell Limited Partnership, Inc., August, 1998.

AAn Assessment Of The Competitive Impact Of Lawyers Title Corporation=s Proposed Acquisition Of The Title Insurance Subsidiaries Of Reliance Group Holdings, Inc.,@ prepared for the Virginia Bureau of Insurance, December, 1997 (With D. Parcell).

"Lost Profits Of Great Lakes Toyota Due To The Improper Business Practices Of Toyota Motor Sales And Related Organizations," confidential expert damage reports, January and June 1996.

"Request Of US West Communications, Inc. For Approval Of Changed Depreciation Rates," expert testimony presented before the Public Service Commission of Utah, November, 1995.

"Retail Wheeling and Other Electricity Competition: Small Business Concerns About Tripping The Light Fantastic," prepared for the Pennsylvania Office of Small Business Advocate, September, 1994 (with K. Strobl).

"Competition, Regulation, And The Public Interest In Telecommunications: Towards A Plan For Maryland," prepared for Maryland People's Counsel, June, 1994 (with K. Strobl).

Book Review of "Health Care Finance: Economic Incentives and Productivity Enhancement," by Steven R. Eastaugh (Auburn House), in The Journal of Risk and Insurance, December, 1993.

"On The NOPR's Failure To Provide Guidelines Regarding The Role Of Cost In Determining Appropriate Oil Pipeline Rates," presentation to Executive Enterprise's Conference on Oil Pipeline Ratemaking For The '90's: Impact Of Anticipated FERC NOPR, Washington, D.C., September, 1993.

"An Investigation Into The Structure And Operation Of Southwestern Bell Telephone Company's Affiliate Transactions," prepared for the Missouri Public Service Commission, January, 1993 (with K. Strobl & A. Yontz).

Book Review of "Regulating Doctors Fees: Competition Benefits and Controls Under Medicare," edited by H.E. Frech, III (The AEI Press), in The Journal of Risk and Insurance, June, 1992.

"Standards For Utility Cost Studies Used To Justify Indirect Costs Assigned To HHS Grants," prepared for the U.S. Department of Health & Human Services, September, 1991 (with K. Strobl & T. Bayliss).

"Forecasts of On-Line Lottery Sales and the Required Number and Distribution of On-Line Agents in Virginia," prepared for General Instrument, Inc., 1988 (with G. Watkins).

"Performance and Diversification of the Blue Cross/Blue Shield Plans in Virginia," prepared for the Bureau of Insurance, Virginia State Corporation Commission, 1987 (with D. Parcell & A. Skirpan).

"The Regulation of Accounting in Virginia," prepared for the Virginia Department of Commerce, 1987 (with J. Bayliss).

"A Simple Method to Evaluate the Economic Feasibility of Streetlighting Purchase and Operation by Municipalities," prepared for Montgomery County Pennsylvania Consortium of Communities, 1985 (with K. Strobl & W. Lowe).

"An Analysis of the InterLATA Access Charges Applicable to the State of Missouri's Electronic Tandem Network," prepared for Spectra Associates, Inc. and the State of Missouri's Telecommunications Planning Department, 1985 (with K. Strobl).

"Towards An Understanding of the Economics of Undue Cross-Subsidization: The Case of Natural Gas Rate Structures," prepared for the Ontario Ministry of Energy, September, 1983.

"Measuring the Economic Value of a Coal Slurry Pipeline to Hampton Roads, Virginia," prepared for the Virginians for Competitive Coal Transportation, 1983 (with K. Strobl & J. McKnight).

"Toward An Understanding of Ramsey Pricing," expert testimony presented before the Interstate Commerce Commission, April, 1982.

"Guide For Evaluating the Community Impact of Rail Service Discontinuance," prepared for the Rail Services Planning Office, Interstate Commerce Commission, January, 1975 (with K. Strobl).

"Connecticut State Rail Plan," prepared for the Connecticut Department of Transportation, 1975 (with J. McKnight & K. Strobl).

"Evolution of the Virginia Banking Structure, 1962-1974: The Effects of the Buck-Holland Bill," William and Mary Law Review, Vol. 16, No. 3, 1975 (with Dr. Parcell).

"An Analysis of the Virginia Consumer Finance Industry to Determine the Need for Restructuring the Rate and Size Ceilings on Small Loans in Virginia and the Process by Which They Are Governed", prepared for the Virginia Consumer Finance Association, 1975 (with D. Parcell).

"The Economic Objectives of Regulation: The Trend in Virginia," William and Mary Law Review, Vol. 14, No. 2, 1973 (with D. Parcell).

An Economic Analysis of the Role of Investment Income in the Insurance Supply Process, Doctorate Dissertation, Virginia Polytechnic Institute and State University, 1972.

"Revision of the Property and Casualty Insurance Ratemaking Process Under Prior Approval in the Commonwealth of Virginia," prepared for the Bureau of Insurance of the Virginia State Corporation Commission, 1971 (with C. Schotta & D. Parcell).

Organized Medicine In Rhode Island: A Case Study of Local Medical Societies, Masters Thesis, University of Rhode Island, 1967.

MEMBERSHIPS
American Economic Association
American Risk & Insurance Association
Industrial Organization Society

VSE PROPOSED DEPRECIATION EXPENSES AND RATES
FOR PLANT ACCOUNTS WITH CURRENT AUTHORIZATIONS
($000)

(1) Plant Account No.	(1) Plant Account Description	(2) Plant Balance @ 12/31/05 1/	(3) Depreciation Expense Current (2)x(5)	(4) Depreciation Expense Proposed 1/	(5) Depreciation Rate Current 2/	(6) Depreciation Rate Proposed 1/	(7) Expense Difference (4)-(3)
Steam Production Plant							
	Brown Station						
311.0	Structures & Improvements	$47,018.7	$1,391.8	$1,033.5	2.96%	2.20%	-$358.3
312.1	Boiler Plant Equipment	184,530.5	4,908.5	4,339.5	2.66%	2.35%	-$569.0
312.2	SO2 Removal System	62,028.9	2,506.0	2,514.8	4.04%	4.05%	$8.8
312.3	Railroad Coal Cars 3/	--	N/A	--	N/A	--	N/A
312.4	NOX Removal System 3/	--	N/A	--	N/A	--	N/A
314.0	Turbogenerator Units	90,228.0	2,318.9	2,506.6	2.57%	2.78%	$187.7
315.0	Accessory Electric Equipment	26,277.4	641.2	488.0	2.44%	1.86%	-$153.2
316.0	Misc. Power Plant Equipment	7,084.2	167.2	191.5	2.36%	2.70%	$24.3
	Subtotal-Brown Station	$417,167.7	$11,933.4	$11,073.9	2.86% 4/	2.65% 4/	-$859.5
	Culley Station						
311.0	Structures & Improvements	$21,279.0	$802.2	$384.2	3.77%	1.81%	-$418.0
312.1	Boiler Plant Equipment	113,750.7	3,822.0	3,996.8	3.36%	3.51%	$174.8
312.2	SO2 Removal System	92,296.7	4,670.2	3,910.2	5.06%	4.24%	-$760.0
312.4	NOX Removal System 3/	--	N/A	--	N/A	--	N/A
314.0	Turbogenerator Units	55,499.4	1,665.0	2,266.6	3.00%	4.08%	$601.6
315.0	Accessory Electric Equipment	4,264.7	152.2	36.3	3.57%	0.85%	-$115.9
316.0	Misc. Power Plant Equipment	4,619.3	176.9	172.8	3.83%	3.74%	-$4.1
	Subtotal-Culley Station	$291,709.8	$11,288.6	$10,766.9	3.87% 4/	3.69% 4/	-$521.7

N/A denotes Not Available.
Note: Results of calculations may differ from amounts shown due to rounding.

VSE PROPOSED DEPRECIATION EXPENSES AND RATES FOR PLANT ACCOUNTS WITH CURRENT AUTHORIZATIONS ($000)

(1)		(2)	(3)	(4)	(5)	(6)	(7)
Plant Account		Plant Balance	Depreciation Expense		Depreciation Rate		Expense Difference
No.	Description	@ 12/31/05 1/	Current (2)x(5)	Proposed 1/	Current 2/	Proposed 1/	(4)-(3)
Steam Production Plant (Cont.)							
	Warrick Station						
311.0	Structures & Improvements	$1,015.7	$71.9	$30.3	7.08%	2.98%	-$41.6
312.1	Boiler Plant Equipment	28,108.1	1,413.8	656.6	5.03%	2.34%	-$757.2
312.4	NOX Removal System 3/	--	N/A	--	N/A	--	N/A
314.0	Turbogenerator Units	6,479.1	282.5	103.5	4.36%	1.60%	-$179.0
315.0	Accessory Electric Equipment	2,224.2	102.1	55.0	4.59%	2.47%	-$47.1
316.0	Misc. Power Plant Equipment	117.8	6.7	5.2	5.70%	4.41%	-$1.5
	Subtotal-Warrick Station	$37,944.9	$1,877.0	$850.6	4.95% 4/	2.24% 4/	-$1,026.4
	TOTAL STEAM PRODUCTION	$746,822.4	$25,099.1	$22,691.4	3.36% 4/	3.04% 4/	-$2,407.7
Other Production Plant							
	Brown Station Gas Turbine						
341.0	Structures & Improvements	$1,692.9	$69.1	$57.1	4.08%	3.37%	-$12.0
342.0	Fuel Holders, Producers & Access.	4,017.7	163.9	137.0	4.08%	3.41%	-$26.9
343.0	Prime Movers	36,490.5	1,488.8	1,256.8	4.08%	3.44%	-$232.0
344.0	Generators	14,960.1	583.4	524.9	3.90%	3.51%	-$58.5
345.0	Accessory Electric Equipment	2,252.2	87.8	77.4	3.90%	3.44%	-$10.4
346.0	Mis. Power Plant Equipment	1,092.3	40.5	37.0	3.71%	3.39%	-$3.5
	TOTAL OTHER PRODUCTION	$60,506.0	$2,433.6	$2,090.2	4.02% 4/	3.45% 4/	-$343.4

N/A denotes Not Available.

Note: Results of calculations may differ from amounts shown due to rounding.

VSE PROPOSED DEPRECIATION EXPENSES AND RATES FOR PLANT ACCOUNTS WITH CURRENT AUTHORIZATIONS ($000)

(1)		(2)	(3)	(4)	(5)	(6)	(7)
Plant Account		Plant Balance	Depreciation Expense		Depreciation Rate		Expense Difference
No.	Description	@ 12/31/05 1/	Current (2)x(5)	Proposed 1/	Current 2/	Proposed 1/	(4)-(3)
Transmission Plant							
350.2	Land Rights 3/	--	N/A	--	N/A	--	N/A
350.3	Land Rights-KY 3/	--	N/A	--	N/A	--	N/A
352.0	Structures & Improvements	$1,666.1	$33.0	$29.1	1.98%	1.75%	-$3.9
353.0	Station Equipment	71,121.6	1,785.2	1,268.1	2.51%	1.78%	-$517.1
354.0	Towers & Fixtures	4,475.4	81.0	63.9	1.81%	1.43%	-$17.1
355.0	Poles & Fixtures	35,908.0	1,249.6	912.0	3.48%	2.54%	-$337.6
356.0	Overhead Conductors & Devices	31,262.9	747.2	638.0	2.39%	2.04%	-$109.2
357.0	Underground Conduit	1,181.0	22.3	22.3	1.89%	1.89%	$0.0
358.0	Underground Conductors & Devices	1,356.6	35.7	40.6	2.63%	2.99%	$4.9
	TOTAL TRANSMISSION	$146,971.6	$3,953.9	$2,974.0	2.69% 4/	2.02% 4/	-$979.9
Distribution Plant							
360.2	Land Rights 3/	--	N/A	--	N/A	--	N/A
361.0	Structures & Improvements	$668.5	$21.0	$21.1	3.14%	3.16%	$0.1
362.0	Station Equipment	53,917.1	1,649.9	1,361.6	3.06%	2.53%	-$288.3
364.0	Poles, Towers & Equipment	43,302.0	1,394.3	1,519.7	3.22%	3.51%	$125.4
365.0	Overhead Conductors & Devices	50,411.9	1,225.0	1,744.2	2.43%	3.46%	$519.2
366.0	Underground Conduit	17,219.5	458.0	446.0	2.66%	2.59%	-$12.0
367.0	Underground Conductors & Devices	41,711.6	1,376.5	1,179.0	3.30%	2.83%	-$197.5
368.0	Line Transformers	52,278.1	1,374.9	1,306.5	2.63%	2.50%	-$68.4
369.0	Services	41,801.9	2,524.8	1,369.1	6.04%	3.28%	-$1,155.7
370.0	Meters	15,488.6	487.9	460.4	3.15%	2.97%	-$27.5
371.0	Installation on Cust. Premises	2,760.5	209.5	119.5	7.59%	4.33%	-$90.0
373.0	Streetlighting & Signal Systems	10,113.8	409.6	286.6	4.05%	2.83%	-$123.0
	TOTAL DISTRIBUTION	$329,673.5	$11,131.5	$9,813.7	3.38% 4/	2.98% 4/	-$1,317.8

N/A denotes Not Available.
Note: Results of calculations may differ from amounts shown due to rounding.

VSE PROPOSED DEPRECIATION EXPENSES AND RATES FOR PLANT ACCOUNTS WITH CURRENT AUTHORIZATIONS ($000)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Plant Account		Plant Balance	Depreciation Expense		Depreciation Rate		Expense Difference
No.	Description	@ 12/31/05 1/	Current (2)x(5)	Proposed 1/	Current 2/	Proposed 1/	(4)-(3)
General Plant							
390.0	Structure & Improvements	$1,630.3	$44.8	$30.9	2.75%	1.90%	-$13.9
391.1	Electronic Equipment	737.5	35.0	87.2	4.75%	11.82%	$52.2
391.2	Furniture & Fixtures	--	--	--	--	-- 5/	--
392.1	Autos	213.1	11.6	47.7	5.42%	22.38%	$36.1
392.2	Light Trucks	--	--	--	--	-- 5/	--
392.3	Trailers	229.6	10.4	5.6	4.53%	2.44%	-$4.8
392.4	Heavy Trucks	7,660.9	85.0	380.9	1.11%	4.97%	$295.9
393.0	Stores Equipment	1.5	0.1	0.0	3.57%	2.93%	$0.0
394.0	Tools, Shop & Garage Equipment	808.0	44.6	12.8	5.52%	1.58%	-$31.8
395.0	Laboratory Equipment	1,479.4	81.8	36.5	5.53%	2.47%	-$45.3
396.0	Power Operated Equipment	1,082.6	53.7	53.6	4.96%	4.95%	-$0.1
397.0	Communication Equipment	--	--	--	--	-- 5/	--
398.1	Miscellaneous Equipment	162.8	2,954.6	2.8	5.51%	1.72%	-$2,951.8
398.2	Direct Load Control Dev. 3/	--	N/A	--	N/A	--	N/A
	TOTAL GENERAL	$14,005.7	$3,321.6	$658.0	23.72% 4/	4.70% 4/	-$2,663.6
	TOTAL RETAIL PLANT	$1,297,979.2	$45,939.8	$38,227.3	3.54% 4/	2.95% 4/	-$7,712.4
Wholesale Power Market							
312.1	Boiler Plant Equipment	$5.6	--	$0.0	--	1.79%	--
316.0	Misc. Power Plant Equipment	860.3	--	15.4	--	1.79%	--
	TOTAL WHOLESALE PLANT	$865.9		$15.4		1.79%	--

N/A denotes Not Available.
Note: Results of calculations may differ from amounts shown due to rounding.

VSE PROPOSED DEPRECIATION EXPENSES AND RATES FOR PLANT ACCOUNTS WITH CURRENT AUTHORIZATIONS ($000) FOOTNOTES

1/ MAC Depreciation Study, Schedule A.

2/ Exhibit E1 of Stone & Webster Depreciation Study (September 1994) based on plant account balances at December 31, 1992.

3/ Stone & Webster Depreciation Study does not include this specific plant account description and corresponding depreciation rate.

4/ Calculated as the composite average depreciation rate.

5/ Fully Depreciated as indicated in the MAC Depreciation Study.

VSE PROPOSED DEPRECIATION EXPENSES AND RATES FOR PLANT ACCOUNTS WITH NO CURRENT AUTHORIZATIONS ($000)

(1)		(2)	(3)	(4)	(5)	(6)
Plant Account		Plant Balance	Depreciation Expense		Depreciation Rate	
No.	Description	@ 12/31/05 1/	Current	Proposed 1/	Current	Proposed
Steam Production Plant						
	Brown Station					
312.3	Railroad Coal Cars	$2,411.7	N/A	$53.0	N/A	2.20%
312.4	NOX Removal System	175,006.0	N/A	9,712.8	N/A	5.55%
	Culley Station					
312.4	NOX Removal System	62,013.2	N/A	3,441.7	N/A	5.55%
	Warrick Station					
312.4	NOX Removal System	25,211.5	N/A	1,399.2	N/A	5.55%
Transmission						
350.2	Land Rights	5,608.5	N/A	102.5	N/A	1.83%
350.3	Land Rights-KY	52.9	N/A	1.1	N/A	2.10%
Distribution						
360.2	Land Rights	6.0	N/A	0.1	N/A	1.67%
General						
398.2	Direct Load Control Dev.	5,047.7	N/A	206.1	N/A	4.08%
	TOTAL	$275,357.5	N/A	14,916.5	N/A	5.42%

1/ MAC Depreciation Study, Schedule A.

N/A denotes Not Available.

VECTREN SOUTH-ELECTRIC
ACCOUNT NO. 353 (STATION EQUIPMENT)
VINTAGE YEAR PLANT INSTALLATIONS AND SURVIVING BALANCES

(1)	(2)	(3)	(4)	(5)	(6)
				Iowa Curve Surviving Plant R1.0-42 3/	
Vintage Year	Age At EOY 2005	Plant Installations 1/	MAC Depreciation Study Surviving Plant Balance 2/	Percent 4/	Amount (3)x(5)
1976	29.5	$883,474	$862,773	72.48%	$640,346
1977	28.5	1,414,255	1,406,322	73.81%	1,043,841
1978	27.5	2,435,823	2,415,388	75.10%	1,829,299
1979	26.5	931,373	889,172	76.36%	711,162
1980	25.5	760,654	902,346	77.58%	590,092
1981	24.5	2,819,202	3,278,602	78.76%	2,220,512
1982	23.5	2,088,383	6,198,401	79.92%	1,668,998
1983	22.5	2,493,844	1,236,504	81.04%	2,020,997
1984	21.5	2,764,062	1,424,702	82.13%	2,270,142
1985	20.5	2,118,776	1,946,279	83.19%	1,762,654
1986	19.5	2,774,555	1,793,803	84.23%	2,336,872
1987	18.5	3,719,310	4,572,165	85.23%	3,170,041
1988	17.5	1,419,713	894,926	86.21%	1,223,970
1989	16.5	477,110	476,105	87.17%	415,893
1990	15.5	669,850	321,319	88.10%	590,161
1991	14.5	636,916	284,598	89.02%	566,953
1992	13.5	4,935,007	3,475,752	89.91%	4,436,924
1993	12.5	1,034,938	576,115	90.78%	939,504
1994	11.5	406,631	5,716,396	91.63%	372,600
1995	10.5	966,482	552,457	92.46%	893,652
1996	9.5	278,930	433,440	93.28%	260,179
1997	8.5	6,623,656	666,267	94.07%	6,230,958
1998	7.5	2,986,520	2,385,160	94.85%	2,832,570
1999	6.5	943,302	296,850	95.60%	901,784
2000	5.5	850,868	407,268	96.33%	819,661
2001	4.5	170,797	170,797	97.05%	165,750
2002	3.5	1,897,670	1,692,025	97.74%	1,854,740
2003	2.5	343,334	343,334	98.41%	337,875
2004	1.5	12,508,909	13,050,735	99.06%	12,391,466
2005	0.5	2,814,184	2,814,184	99.69%	2,805,518
TOTAL		$65,168,528	$61,484,185		$58,305,116

1/ Consists of additions, adjustments and transfers per VSE plant-in-service reports (e.g., FERC Form 1) provided in response to OUCC discovery.

2/ VSE response to OUCC discovery.

3/ MAC proposed Iowa Curve R 1.0-42.

4/ Per application of Iowa Curve R1 data in Table C, Depreciation Systems, Wolf & Fitch, 1994 Edition.

VECTREN SOUTH-ELECTRIC
ACCOUNT NO. 365 (OVERHEAD CONDUCTORS & DEVICES)
VINTAGE YEAR PLANT INSTALLATIONS AND SURVIVING BALANCES

(1)	(2)	(3)	(4)	(5)	(6)
				Iowa Curve Surviving Plant R1.0-33 3/	
Vintage Year	Age At EOY 2005	Plant Installations 1/	MAC Depreciation Study Surviving Plant Balance 2/ 4/	Percent 4/	Amount (3)x(5)
1976	29.5	$569,692	$569,692	60.47%	$344,504
1977	28.5	726,046	726,046	62.52%	453,955
1978	27.5	749,836	749,837	64.52%	483,804
1979	26.5	997,940	997,940	66.46%	663,244
1980	25.5	1,328,015	1,328,015	68.34%	907,600
1981	24.5	1,489,746	1,489,746	70.16%	1,045,273
1982	23.5	1,437,971	1,437,971	71.93%	1,034,286
1983	22.5	1,665,189	1,560,712	73.63%	1,226,071
1984	21.5	1,142,625	1,123,809	75.27%	860,094
1985	20.5	1,159,660	1,156,472	76.86%	891,314
1986	19.5	1,105,001	1,082,547	78.39%	866,213
1987	18.5	1,134,035	1,134,035	79.87%	905,713
1988	17.5	1,328,303	1,328,303	81.29%	1,079,786
1989	16.5	1,378,757	1,378,756	82.67%	1,139,755
1990	15.5	1,355,272	1,355,272	83.99%	1,138,337
1991	14.5	687,317	686,679	85.28%	586,124
1992	13.5	1,030,661	1,024,683	86.52%	891,726
1993	12.5	1,077,653	1,063,962	87.72%	945,361
1994	11.5	1,512,373	1,254,208	88.89%	1,344,385
1995	10.5	1,254,792	1,253,090	90.03%	1,129,653
1996	9.5	763,657	763,657	91.13%	695,919
1997	8.5	2,147,773	2,147,773	92.20%	1,980,271
1998	7.5	1,025,316	1,025,316	93.24%	956,015
1999	6.5	1,477,655	1,904,749	94.25%	1,392,673
2000	5.5	2,043,524	2,199,282	95.22%	1,945,933
2001	4.5	1,472,373	1,470,315	96.17%	1,415,940
2002	3.5	2,337,042	1,753,503	97.08%	2,268,731
2003	2.5	2,697,106	2,697,793	97.95%	2,641,916
2004	1.5	3,663,361	3,662,361	98.80%	3,619,295
2005	0.5	4,279,244	4,279,244	99.61%	4,262,431
TOTAL		$45,037,935	$44,605,768		$39,116,320

1/ Consists of additions, adjustments and transfers per VSE plant-in-service reports (e.g., FERC Form 1) provided in response to OUCC discovery.

2/ VSE response to OUCC discovery.

3/ MAC proposed Iowa Curve R 1.0-42.

4/ Per application of Iowa Curve R1 data in Table C, Depreciation Systems, Wolf & Fitch, 1994 Edition.

VECTREN SOUTH-ELECTRIC
ACCOUNT NO. 369 (SERVICES)
VINTAGE YEAR PLANT INSTALLATIONS AND SURVIVING BALANCES

(1)	(2)	(3)	(4)	(5)	(6)
				Iowa Curve Surviving Plant S1.0-30 3/	
Vintage Year	Age At EOY 2005	Plant Installations 1/	MAC Depreciation Study Surviving Plant Balance 2/ 4/	Percent 4/	Amount (3) x (5)
1976	29.5	$445,643	$233,192	51.51%	$229,564
1977	28.5	585,673	585,672	54.53%	319,386
1978	27.5	677,602	677,602	57.53%	389,856
1979	26.5	733,081	733,081	60.51%	443,555
1980	25.5	666,660	666,660	63.43%	422,894
1981	24.5	638,529	638,529	66.31%	423,398
1982	23.5	579,926	579,926	69.12%	400,826
1983	22.5	771,140	771,140	71.85%	554,060
1984	21.5	1,081,039	1,081,039	74.49%	805,297
1985	20.5	1,108,875	1,108,875	77.04%	854,274
1986	19.5	1,243,460	1,243,460	79.48%	988,312
1987	18.5	1,145,474	1,145,474	81.80%	937,040
1988	17.5	1,118,404	1,118,404	84.00%	939,503
1989	16.5	1,056,747	1,056,748	86.07%	909,587
1990	15.5	988,861	988,861	88.00%	870,240
1991	14.5	950,048	950,048	89.79%	853,074
1992	13.5	1,075,239	1,075,239	91.44%	983,150
1993	12.5	1,183,365	1,183,365	92.92%	1,099,639
1994	11.5	1,412,942	1,411,093	94.26%	1,331,883
1995	10.5	1,850,231	1,850,116	95.45%	1,766,048
1996	9.5	1,731,427	1,731,427	96.48%	1,670,517
1997	8.5	1,792,536	1,792,536	97.37%	1,745,320
1998	7.5	1,936,654	1,936,654	98.11%	1,899,972
1999	6.5	2,109,695	2,765,582	98.70%	2,082,348
2000	5.5	2,552,784	2,747,357	99.17%	2,531,639
2001	4.5	164,678	164,678	99.52%	163,887
2002	3.5	4,662,281	3,811,811	99.76%	4,650,977
2003	2.5	2,547,930	2,547,930	99.90%	2,545,479
2004	1.5	2,585,808	2,585,808	99.98%	2,585,212
2005	0.5	2,619,588	2,619,588	100.00%	2,619,555
TOTAL		$42,016,320	$41,801,895		$38,016,492

1/ Consists of additions, adjustments and transfers per VSE plant-in-service reports (e.g., FERC Form 1) provided in response to OUCC discovery.

2/ VSE response to OUCC discovery.

3/ MAC proposed Iowa Curve R 1.0-42.

4/ Per application of Iowa Curve S1 data in Table C, Depreciation Systems, Wolf & Fitch, 1994 Edition.

Vectren South - Electric
Culley Account No. 312.1 (Boiler Plant Equipment)
Installation, Retirements, and Surviving Plant

(1) Observations	(2) Age	(3) Cumulative Installations 1/	(4) Cumulative Retirements 2/	(5) Plant Percent Surviving (PS) 3/
50	0.5	$119,756,533	$0	100.000000%
49	1.5	119,756,533	0	100.000000%
48	2.5	119,484,515	0	100.000000%
47	3.5	118,642,149	0	100.000000%
46	4.5	106,982,967	0	100.000000%
45	5.5	104,625,798	0	100.000000%
44	6.5	100,142,982	0	100.000000%
43	7.5	99,705,565	0	100.000000%
42	8.5	99,102,052	0	100.000000%
41	9.5	93,273,048	150,958	99.838155%
40	10.5	91,496,264	173,312	99.810580%
39	11.5	85,107,508	173,312	99.796361%
38	12.5	77,788,573	173,312	99.777201%
37	13.5	76,286,013	173,312	99.772813%
36	14.5	74,830,258	173,312	99.768393%
35	15.5	71,709,054	173,312	99.758312%
34	16.5	52,859,166	173,312	99.672125%
33	17.5	52,368,739	173,312	99.669054%
32	18.5	51,831,827	173,312	99.665626%
31	19.5	44,922,571	226,161	99.496554%
30	20.5	44,797,679	226,161	99.495150%
29	21.5	44,797,679	226,161	99.495150%
28	22.5	44,221,074	226,161	99.488567%
27	23.5	44,221,074	774,718	98.248080%
26	24.5	41,197,130	774,718	98.119486%
25	25.5	41,197,130	774,718	98.119486%
24	26.5	41,197,130	774,718	98.119486%
23	27.5	41,197,130	774,718	98.119486%
22	28.5	41,197,130	774,718	98.119486%
21	29.5	41,197,130	898,070	97.820067%
20	30.5	41,197,130	946,901	97.701536%
19	31.5	41,197,130	946,901	97.701536%
18	32.5	41,197,130	996,020	97.582307%
17	33.5	11,670,993	996,020	91.465850%
16	34.5	11,670,993	996,020	91.465850%
15	35.5	11,670,993	996,020	91.465850%
14	36.5	11,670,993	1,070,182	90.830412%
13	37.5	11,670,993	1,070,182	90.830412%
12	38.5	11,670,993	1,070,182	90.830412%
11	39.5	11,670,993	1,139,211	90.238954%
10	40.5	6,261,264	1,139,211	81.805415%
9	41.5	6,261,264	1,139,211	81.805415%
8	42.5	6,261,264	1,139,211	81.805415%
7	43.5	6,261,264	1,139,211	81.805415%
6	44.5	6,261,264	1,139,211	81.805415%
5	45.5	6,261,264	1,139,211	81.805415%
4	46.5	6,261,264	1,150,159	81.630562%
3	47.5	6,261,264	1,194,814	80.917367%
2	48.5	6,261,264	1,194,814	80.917367%
1	49.5	$6,261,264	$1,194,814	80.917367%

1/ These amounts are the total installation dollar amounts for all plant which has achieved Age col (2).
2/ These amounts are the total retirement amounts attributable to plant which has achieved Age Col (2).
3/ (PS) = [1 - (4) / (3)]

Vectren South - Electric
Culley Account No. 312.1 (Boiler Plant Equipment)
Best-Fit Iowa Curves Ranked By Lowest MSE

Rank	Iowa Curve Type	Service Life Years	Mean Square Error (MSE)
1	S2	65.5350	0.0366159%
2	S1.5	70.4059	0.0377705%
3	L2	75.8599	0.0385870%
4	L2.5	69.7216	0.0399406%
5	R3	61.8895	0.0434649%
6	S1	76.9011	0.0458177%
7	R3.5	58.7378	0.0468914%
8	S2.5	62.1716	0.0479237%
9	L1.5	85.3169	0.0548173%
10	L3	64.7804	0.0570198%
11	R2.5	67.3035	0.0629285%
12	R4	56.4027	0.0663374%
13	L3.5	61.0420	0.0678181%
14	L1	97.9295	0.0690386%
15	S0.5	86.6233	0.0727825%
16	S3	59.5399	0.0747886%
17	R2	75.2495	0.0897001%
18	S0	100.1821	0.0963676%
19	L4	57.9275	0.1053824%
20	L0.5	116.8675	0.1088271%
21	L0	144.0678	0.1323066%
22	R1.5	89.5403	0.1336500%
23	R1	110.7718	0.1618653%
24	S4	55.4593	0.1891253%
25	O2	202.9582	0.1920640%
26	O1	180.5565	0.1921925%
27	O3	297.5733	0.1941813%
28	O4	404.1445	0.1952263%
29	R5	53.4822	0.2244028%
30	L5	54.7164	0.2329852%
31	S5	53.3634	0.3521655%
32	S6	52.3218	0.5187901%

Vectren South - Electric
Culley Account No. 312.1 (Boiler Plant Equipment)
Weighted Average Age of Surviving Plant

(1) Year	(2) Plant Vintage Age	(3) Reported PIS At 12/31/05	(4) Weighted Age (2) x (3)
1954	51.5		0
1955	50.5	6,205,661	313,385,881
1956	49.5		0
1957	48.5		0
1958	47.5		0
1959	46.5		0
1960	45.5		0
1961	44.5		0
1962	43.5		0
1963	42.5		0
1964	41.5		0
1965	40.5		0
1966	39.5	5,266,538	208,028,251
1967	38.5		0
1968	37.5		0
1969	36.5		0
1970	35.5		0
1971	34.5		0
1972	33.5		0
1973	32.5	29,304,835	952,407,138
1974	31.5		0
1975	30.5		0
1976	29.5		0
1977	28.5		0
1978	27.5		0
1979	26.5		0
1980	25.5		0
1981	24.5		0
1982	23.5	1,786,778	41,989,283
1983	22.5	635,760	14,304,600
1984	21.5	576,605	12,397,008
1985	20.5	0	0
1986	19.5	124,892	2,435,394
1987	18.5	6,909,256	127,821,236
1988	17.5	536,912	9,395,960
1989	16.5	490,427	8,092,046
1990	15.5	18,849,888	292,173,264
1991	14.5	3,121,204	45,257,458
1992	13.5	1,282,443	17,312,981
1993	12.5	1,502,560	18,782,000
1994	11.5	7,318,935	84,167,753
1995	10.5	6,388,756	67,081,938
1996	9.5	1,776,784	16,879,448
1997	8.5	5,829,004	49,546,534
1998	7.5	613,513	4,601,348
1999	6.5	437,417	2,843,211
2000	5.5	4,482,816	24,655,488
2001	4.5	2,357,169	10,607,261
2002	3.5	11,659,182	40,807,137
2003	2.5	842,366	2,105,915
2004	1.5	272,018	408,027
2005	0.5	0	0
Total		**$118,571,719**	**2,367,486,556**

Weighted Average Age is Total (4) / Total (3) = 19.9667 years

Vectren South - Electric
Culley Account No. 312.1 (Boiler Plant Equipment)
Remaining Plant Lives at Various Truncation Years

Line Nos.	Description	Truncation Years 2005	2018	2023	2028	2033	2038	2043
(1)	Weighted Average Age Plus Truncation Years 1/	19.97	32.97	37.97	42.97	47.97	52.97	57.97
(2)	Average Service Life In Years	66.00	66.00	66.00	66.00	66.00	66.00	66.00
(3)	Average Age Plus Truncation Years as a % of Average Service Life: (1) / (2)	30.26%	49.95%	57.53%	65.11%	72.68%	80.26%	87.83%
(4)	Remaining Life as a % of Average Service Life 2/	70.30%	53.51%	47.95%	42.91%	38.36%	34.26%	30.56%
(5)	Remaining Life in Years 3/	46.40	11.08	14.75	18.08	21.08	23.79	26.23

1/ Weighted average age from Page 3 plus truncation periods of 13, 18, 23, 28, 33 and 38 years respectively.

2/ Per application of Iowa Curve S2 remaining life data in Table C, Depreciation Systems, Wolf & Fitch, 1994 Edition at Weighted Average Age in Line (1).

3/ Calculated as (2) x (4) in 2005. For all other years, equal to value in 2005 (46.40) less product of (2) x (4).

PUBLIC'S EXHIBIT NO. 5

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

SOUTHERN INDIANA GAS AND	)	
ELECTRIC COMPANY D/B/A VECTREN	)	
ENERGY DELIVERY OF INDIANA, INC.	)	CAUSE NO. 43111
(VECTREN-ELECTRIC)	)	

DIRECT TESTIMONY

OF

RICHARD A. GALLIGAN

ON BEHALF OF INDIANA OFFICE OF
UTILITY CONSUMER COUNSELOR

FEBRUARY 2007

EXETER
ASSOCIATES, INC.
5565 Sterrett Place
Suite 310
Columbia, Maryland 21044

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STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

SOUTHERN INDIANA GAS AND	)	
ELECTRIC COMPANY D/B/A VECTREN	)	
ENERGY DELIVERY OF INDIANA, INC.	)	CAUSE NO. 43111
(VECTREN-ELECTRIC)	)	

DIRECT TESTIMONY OF RICHARD A. GALLIGAN

I. Introduction

Q. Please state your name and business address.

A. My name is Richard A. Galligan. I am a Principal with Exeter Associates, Inc., a firm of consulting economists specializing in utility economics. My business address is 5565 Sterrett Place, Suite 310, Columbia, Maryland 21044.

Q. What is your educational background?

A. I have two degrees from the University of Wisconsin, including a Master's degree in economics and, in addition, I completed two years of graduate study at the University of Minnesota, where I fulfilled all of the course work requirements for the Ph.D. degree.

Q. What is your professional experience?

A. I have taught economics at the University of Minnesota, the University of Wisconsin, Mankato State University and Webster College. In these positions, I taught a wide range of courses covering all aspects of economics.

In January 1975, I joined the staff of the Minnesota Public Service Commission at the commencement of that Commission's responsibility over gas and electric utility operations in the State of Minnesota. From 1976 to 1984, I was an economic consultant specializing in public utility rate regulation of gas, electric and telephone utilities.

From 1984 until 1987, I was Director of Utilities Division at the Iowa State Commerce Commission and Executive Director of the Texas Public Utility Commission. At Iowa, my responsibilities included the management and administration of all Utilities Division activities regarding the regulation of gas, electric and telephone utilities operating in the State of Iowa under Iowa State Commerce Commission jurisdiction. At the Texas Public Utility Commission, I was responsible for the management and day-to-day administration of that Commission's regulatory activities regarding all aspects of its jurisdictional responsibilities. I also served briefly as General Manager of Rates & Regulatory Affairs at Gas Company of New Mexico before assuming my present position at Exeter Associates, Inc., in October 1987.

Q. Have you previously testified in regulatory proceedings on utility rates?

A. Yes. I have previously presented testimony on more than 100 occasions before the Federal Energy Regulatory Commission ("FERC") and the public utility commissions of Alabama, California, Connecticut, Delaware, the District of Columbia, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Louisiana, Maine, Maryland, Michigan, Minnesota, Missouri, Montana, Nevada, New Hampshire, New Jersey, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah and Vermont.

Q. What is the purpose of your testimony?

A. Exeter Associates, Inc., was retained by the Indiana Office of Utility Consumer Counselor ("OUCC") to review the class cost of service study, the proposed revenue allocation, and the rate design proposals contained in Vectren Energy Delivery of Indiana, Inc.'s ("Vectren's" or "the Company's") current application for a general rate increase. My testimony addresses the allocation of certain electric generation and distribution costs in the cost of service study, the revenue allocation, and rate design issues applicable to residential customers.

Q. Have you prepared schedules to accompany your testimony?

A. Yes. I have prepared Exhibits RAG-1 through RAG-6, which are attached to my testimony.

Q. How is the remainder of your testimony organized?

A. Following this introductory section, my testimony is divided into three additional sections. The first additional section begins with a brief summary overview of the generation and distribution cost allocation methodology reflected in the class cost of service study submitted on behalf of Vectren. Following the overview, I detail the reasons that support a finding that the Company's proposed allocation of its generation plant and related costs, and certain distribution costs produces an unreliable indication of the costs of serving the various customer classes.

A. The second additional section presents my recommendation regarding the allocation among the various customer classes of any revenue increase authorized in this proceeding. The final section is a discussion of the Company's Residential rate design proposals and my evaluation and recommendations with respect to Vectren's proposals.

Q. What conclusions have you reached as a result of your review and analysis?

A. I have reached the following conclusions:

- Vectren's allocation of its generation costs, certain portions of its secondary distribution plant and related costs is at odds with the principle of cost causality, and produces unrealistic indications of calculated class rates of return;
- The fundamental service that Vectren provides is the delivery of its customers' annual energy requirements at all times during the year, and at varying rates of delivery;

- A large portion of Vectren's annual delivery costs are directly related to the fundamental service that Vectren provides;
- Vectren's proposed cost-of-service study allocates no portion of its generation and certain distribution capital-related costs on the basis of the fundamental service it provides, violating the principle that costs should be allocated on the basis of the service units that cause the costs to be incurred;
- My proposed allocation of Primary and Secondary distribution plant investment and related costs, partially on the basis of average demands and partially on the basis of peak demands eliminates the misallocations in Vectren's study and is consistent with the principle of cost causality;
- Vectren's proposed revenue spread, based directly on its cost of service study results, is not unreasonable;
- The requested authority to increase the Rate A Residential Service Customer Charge from $4.35 to $7.50 is disproportionately large; and
- Vectren's proposal to increase the declining nature of its residential two-block rate structure by proposing a substantially smaller tailblock rate increase is not supported by its class cost of service study.

II. Allocation of Costs in Vectren's Cost of Service Study

Q. Please describe the attributes of a class cost of service study.

A. Average, embedded, historic class cost of service studies of the type performed by Mr. Kerry A. Heid on behalf of Vectren are performed in an attempt to determine the share of total costs that is incurred to provide service to each class of customers. The studies are called average, embedded, historic cost studies because they attempt to directly assign or allocate actual book plant and related costs, adjusted to test year levels as authorized by the Commission, to each customer class. Mr. Heid describes his study as a fully allocated cost of service study based on Vectren's embedded cost of providing service. The average costs of various components of service, i.e., the total costs divided by the related service units, are allocated to each class on the basis of each class' service units that have "caused" the costs to be incurred.

The costs are first functionalized into broad cost categories, such as production costs, transmission costs and distribution costs. These costs may be further refined by voltage level and may include additional cost functions. Costs are then classified as to whether the costs are demand related, energy related, customer related or related to revenues. Finally, the costs are allocated to the customer classes on the basis of various measures of demand, energy, and customers in proportion to each class' share of the various allocation measures. Costs that are largely the subject of this proceeding, i.e., non-fuel capital related costs and other O&M costs, have been allocated overwhelmingly by the Company on a demand and customer basis excluding allocations on an energy basis.

A. <u>Allocation of Vectren's Generation Plant and Generation Plant-Related Costs</u>

Q. Please describe the basis upon which Vectren allocated its generation plant.

A. Vectren allocated its total generation facilities investment and its generation plant-related costs on the basis of each class' relative share of the four highest system peak demands, which occurred in June, July, August and September during the test year. Vectren's generation production plant, at $1.2 billion compared to its total plant of $1.7 billion, accounts for 70 percent of the Company's plant. Discussing the use of the 4-Coincident Peak method for the assignment of generation production plant, Mr. Heid states that this period represents Vectren's planning peak season.

Q. You have used the terms generation plant and generation plant-related costs. Please explain what these terms mean.

A. "Generation plant" refers to the original cost investment in plant-in-service. "Generation plant costs" refers to the capital costs that are associated with generation plant. These costs include interest, equity return, corporate income taxes on equity earnings and depreciation expense, i.e., the annual generation plant carrying costs. As that generation plant investment is allocated to class, so too are the associated capital cost allocated to class.

I use the term "Generation Plant-Related costs" to refer to various other O&M costs that are allocated on the basis of how generation plant has been allocated. Some of these other Generation Plant-Related costs may be directly related to generation plant, for example, the costs of boiler maintenance. Other costs, for example, property taxes or certain O&M costs that are not directly related to specific functionalized plant, may be allocated, in part, on total plant or total depreciation expense, which depends on how plant was allocated in the first place. Thus, as plant is allocated to class, this affects the amount of associated capital costs allocated to class and also affects the amount of any other cost whose allocation depends, in part, on how the plant investment was allocated in the first place.

Q. Are Vectren's total electric generation production plant investment costs caused by the peak demands of its customers?

A. No. Mr. Heid's statement that Vectren's summer peak experience represents the "planning peak season" is not a reasonably complete statement of a utility's planning considerations. It would be inconsistent with rational economic planning to base generation plant investment decisions on the basis of meeting peak demands only. A simple example reveals how planning generation additions only on the basis of peak demands for power leads to a vastly different plant mix than Vectren's current and foreseeable mix of plants. If Vectren only had to invest in generation plant to meet its four hourly peak demands, it would most economically meet those requirements by building peaking plant facilities only. This is so because peaking generation facilities are more economical for meeting peak demands than for meeting sustained demands for electricity. Baseload plants cost more than peaking plants for a number of reasons including their ability to utilize lower cost fuel types such as coal instead of natural gas, to be more efficient, and often more durable in meeting sustained electric generation requirements. The inclusion of baseload plants in a utility's plant mix requires consideration of an electric utility's entire load duration curve, not its peak demands for just a few hours per year. When sustained demands for electricity exist, the baseload plant can be operated for extended periods so as to accumulate fuel and operational cost savings to overcome the higher initial and on-going capital costs of the baseload plant.

Sustained demands are necessary to warrant the investment in baseload generation facilities. Peaking plants are more economical for meeting peak demands.

Q. Does Vectren experience sustained electric demands in addition to its customers' peak demands for electricity?

A. Yes. Exhibit _____ (RAG-1) contains Vectren's 2006 load duration curve ("LDC"). The LDC shows Vectren's load requirements for each hour of the year, sorted in descending order. The loads shown on this exhibit reveal that Vectren's load requirements are near its peak demands for relatively few hours in the year, but demand requirements are between 500 MWhs and 800 or 900 MWhs during most of the 8,760 hours in a year. Vectren must plan its generation capacity mix of baseload and peaking plant so as to most economically provide for the sustained loads its requirements exhibit.

Q. Please comment on the importance of Vectren's baseload plant and the Company's reliance on its baseload plant in meeting its customers' energy requirements.

A. Seventy-eight percent of Vectren's net generating capability is provided from the Company's baseload generating units, and 22 percent of the Company's capacity is provided from its peaking units. However, these baseload/peaking capacity amounts, where installed baseload capacity is 3.6 times the peaking capacity, understates the Company's reliance on its baseload units to meet its sustained load requirements. In 2005 for example, Vectren met its native load demand requirements for electricity and other sales by producing 7,174,921 MWhs from its baseload units compared to only 69,183 MWhs from its peaking units. Over 99 percent of Vectren's 2005 generation was produced from its baseload units. Vectren's baseload units were connected to load for an average of 7,700 hours in 2005, while Vectren's peaking units were connected to load an average of 250 hours. In response to OUCC Data Request No. 9, Question 270, Vectren states. "... Over 95 percent of Vectren's energy is generated by coal." Coal is the fuel